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ABSTRACTS

I. ORGANIC FIBERS

ARGENTINE MARKET. Export market review: buying capacity of Argentina. *Silk & Rayon 19,* 594, 654-5 (June 1945). A survey of the market in Argentina for British textiles includes data on imports during 1935-39 from competing countries, including the United States. It is claimed that three-fourths of the inhabitants of Argentina live in cities and "so need sophisticated clothes;" that in 1939 Argentina had 753 textile concerns with an output valued at $285,856,082; that sericulture is being attempted; that two concerns were producing rayon yarns in 1938; that the raw cotton harvest was 120,000 metric tons in 1943-44; and that the prospects for British textiie exporters are excellent.

IMPERIAL CHEMICAL INDUSTRIES, LTD. I. C. I.: Dyestuffs group expansion. Anon. *Silk & Rayon 19,* 653 (June 1945). The parent company and its 63 subsidiaries had a gross income in 1944 of £18,194,047. The disposition of this income in taxes, depreciation, war personnel reserve, etc., is indicated, and the taxes are discussed. Nothing is said about the income of the Dyestuffs group, but the demand for dyes increased during 1944.

SOVIET TEXTILES. Russian textiles. Anon. *Textile Mfr. 71,* 328 (August 1945). The Soviet textile industry is increasing civilian production in 100 repaired and in 20 new mills. Particular attention is being paid to increasing the variety of cloths and improving their finish. Art departments have been organized in the large mills, and the trusts have art councils to pass on designs.

HYGROSCOPICITY OF TEXTILES. The moisture relations of textiles. A survey of the literature. P. W. Carlene, Imperial Chemical Industries, Ltd. *J. Soc. Dyers & Colourists* (September 1944), through *Am. Dyestuff Reptr. 34,* 322-7, 334 (August 13, 1945); *Textile J. Australia 20,* 187-92 (June 20, 1940). In a review of 56 references information is given on: the amount of water that is taken up and given up by cotton, wool, rayons, silk, and nylon under different conditions of humidity and temperature; the effect of moisture on the elastic properties, swelling and rigidity of the first four textiles mentioned above; and the effects on water absorption of processing, *e. g.,* mercerization, heating in the presence of moisture, bleaching, and dyeing. The mechanism of absorption in each type of fiber is considered at length. Two figures and two tables.

STRETCH SPINNING. Individual filament control in stretch spinning. American Viscose Corp. Brit. P. 566 983. In stretch spinning a running length of filaments containing sufficient conductive liquid to render them electrically conductive is heated by inducing a high frequency electric current. Treated by this method, the individual filaments have the same strength and extensibility.

SPINNING ALBUMINOUS SUBSTANCES. Aqueous albuminous substance spinning method. Rudolf Singer. Can. P. 429 104, July 31, 1945. In dry-spinning aqueous albuminous substances 1% of "saponaceous substance" (esters of fatty acids named in one claim) based on the amount of albumen drying substance present, is added to the spinning mass.

SPINNING ALBUMINOUS SUBSTANCES. Aqueous albuminous substance spinning method. Rudolf Singer. Can. P. 429 105, July 31, 1945. In the dry-spinning of artificial threads from albuminous substances the issuing thread is contacted first with an atmosphere practically saturated with water vapor and having a temperature approximately equal to the mean temperature of spinning, then contacted with a current of gas at a lower temperature, and finally treated with a current of dry air.

I, 1. Vegetable

COTTON DEMAND. World demand for raw cotton may be about double 1941-44 annual rate. Anon. *Cotton (Manchester) 51,* No. 2467, 7 (August 4, 1945). The U. S. Department of Agriculture predicted that the world demand for raw cotton in 1945-46 will be twice as high as the annual rate in 1941-44, *i. e.,* seven to eight million bales, on the assumption that Continental Europe will be able to resume manufacture of cotton textiles and rayon textiles on cotton machinery to its full capacity, where full capacity is defined as 85% that of the 1934-38 average. Although 85% of the textile mills may be intact, labor, financing, marketing arrangements, and fuel will present so many difficulties that the consumption of raw cotton will fall short of the above figures.

COTTON GOODS. No serious shortage of post-war cotton goods. Anon. *Fibre & Fabric 98,* No. 3160, 10 (August 25, 1945). The quick capitulation of Japan has eliminated the shortage that was expected this next year in cotton goods in the Far East. As things stand now "the total relief needs are . . . estimated at 3,000,000,000 yards, which will be easily met, with the 2,500,000,000 estimated Japanese and eastern Chinese production and normal exports of 500,000,000 yards from this country and Great Britain. The exact amount due to be shipped from this country . . . it is believed . . . will not exceed 150,000,000 yards. The method of distribution has not yet been decided."

I, 2. Animal

SERICULTURE. Sericulture in Ireland. Barbara Budden. *Silk & Rayon 19,* 627, 630 (June 1945). The government of Ireland is fostering sericulture in the hope that it will become a prosperous home industry. The first silk produced at Mount St. Joseph's, Roscrea, County Tipperary, was judged satisfactory by G. H. Heath & Co., Ltd. Lady Hart Dyke, Lullingstone, Kent, the only sericulturist in England, who furnished the cocoons from which Father Dermont started, is stated to be envious of the government sponsorship, for England has neglected her efforts so far.

I, 3. Artificial

I, 3b. Protein fibers

ARDIL. Synthetic fibres from vegetable proteins. D. Traill, Imperial Chemical Industries, Ltd. *J. Soc. Dyers & Colourists 61,* 150-55 (June 1945). A history of synthetic protein fibers and a consideration of the availability of proteins in general are included in a discussion of the chemistry of the peanut, and the methods of preparing and spinning the fiber. Ardil is a cream-colored, crimped fiber with a soft, wool-like handle, of approximately circular cross-section that can be made in any required length. The crimp is developed by shrinkage. It has a soft luster; does not shrink exactly like wool; is mothproof; takes the same dyes as other protein fibers and also direct cotton dyes; obeys Hooke's law up to 5% elongation; is more crease resistant than cellulosic fibers; absorbs more water than wool, but has a sorption-hysteresis curve like that of wool; felts by welding and molding when heated and pressed; has poor resistance to abrasion when used alone but increases the abrasion resistance of other fibers; in fabrics handles like wool and gives the same thermal insulation as comparable all-wool fabric; and can be woven or knit on worsted, woolen, and cotton systems alone or mixed with wool, cotton, and viscose-rayon staple. Its tensile strength is 10 kg. per sq. m. (14,000 lb. per sq. in.) and elongation at break 50 to 100%; and its heat of complete wetting is 19 cal. per g. when dry and 8 when it contains 10% water, compared with 24 for dry wool and 7 for wool containing 12% water, and 5 for dry cotton. About 8,000,000 tons a year of peanuts were harvested annually before the war. When produced on a large scale the price of Ardil should not exceed half that of wool.

ALGINATE THREADS. Manufacture of alginate threads. R. B. Hall (to Courtaulds, Ltd.). Brit. P. 567 641. When manufacturing alginate threads by projecting a solution of alkali alginate into a coagulating bath and then treating in the form of helices on a thread-advancing device, the presence of oil on the thread causes the helices to run together and this interferes with the proper treatment of the thread. Good results can be obtained if the thread is treated in the absence of oil with a solution containing a small proportion of a wetting-out agent

which is either cationic or non-ionogenic in character. Such compounds include lauryl pyridinium sulfate, cetyl pyridinium chloride, etc. This wetting-out agent is added both to the coagulating bath and to all the treating liquids used subsequently, including the final wash liquid.

PEANUT FIBER. Fibre solution production. John Pringle Dickson & William Sever (to Imperial Chemical Industries, Ltd.). Can. P. 429, 007, July 24, 1945. Peanut globulin is prepared for spinning by maintaining it until it reaches a viscosity suitable for spinning in a solution made from the globulin at its isoelectric point and aqueous inorganic caustic alkali concentrated enough to raise the pH of the solution to 12.5 when it is first prepared, but not concentrated enough to cause it to lose viscosity rapidly. The globulin is spun by extruding the solution into a coagulating bath and removing the coagulated fiber at a rate exceeding the linear rate of extrusion.

I, 4. Synthetic

I, 4a. Nylon type

POLYESTER AMIDE. Donald Drake Coffman (to Canadian Industries, Ltd.). Can. P. 428 961, July 24, 1945. Fiber-forming polyester amides are prepared by heating until the product can be drawn into continuous pliable filaments a substance which forms a linear polyamide (monoaminomonocarboxylic acids or mixtures of diamine and dibasic carboxylic acid are claimed) with a substance which forms a linear polyester (a diprimary glycol having at least one hydrocarbon substituent attached to the chain of atoms separating the hydroxyl groups is claimed).

I, 4b. Vinyl and vinylidene polymers and copolymers

CANADIAN RAYON. War-time changes in the rayon field of Canada. Elizabeth F. Mann. *Silk & Rayon 19,* 638 (June 1945). Courtaulds (Canada), Ltd., devoted 6,000,000 lbs. of viscose rayon yarn, half of its production, to the manufacture of tire cord during the war. Deficits in civilian supplies were made up by use of acetate yarn from Canadian Celanese, Ltd. A dye formula department, set up by Courtaulds, but handled by the Ontario Research Foundation, is studying gas fading of acetate rayons and fabrics containing acetate yarn, and has developed a test for dimensional restorability of fabrics after being washed and ironed as by the average housewife. This latter test is described, but not in detail.

I, 5. Applications as fibers

COTTON LINTERS. Cotton linters: their source, purification, and uses. E. F. Hinner, Hercules Powder Co. *Chemurgic Digest 4,* 179-83 (May 31, 1945). According to statistics of the total production of cotton, cotton linters, and cotton linters for use in chemical industry for 1910-40, the chemical industry consumes 50-60% of all cotton

linters produced in the U. S. In 1941 the final uses of linters were as follows: 10.7% for viscose, 7.5% for cuprammonium and miscellaneous rayons, 28.6% for cellulose acetate, and 53.2% for nitrocellulose. Methods of selecting, purifying, and packaging linters for further use are described with the aid of analyses of the raw and purified linters and photographs. Other uses of linters are listed.

WADDING BAT. Wrapped wadding bat. William F. Hayes. Can. P. 428 914, July 24, 1945. Bulky, but light-weight wadding bat about one inch thick comprises (a) a number of highly porous bodies formed of non-woven flexible and elastic wadding fibers built up into a loose felted body and held together by a flexible and resilient bonding material (rubber is named in one claim) in adhesive contact with the fibers on the surface of adjacent bodies; and (b) a thin flexible wrapper covering the bat.

MIXING MACHINE. Fibrous and comminuted material mixing machine. Thomas Clifford Williams (to The British Cotton Industry Research Association). Can. P. 429 122, July 31, 1945. A machine for manufacturing fibrous composites consisting of an intimate, uniform mixture of fibers and comminuted materials comprises means for opening the fibrous materials, means for establishing an air stream to suspend the fibers, means for collecting and condensing the fibers from the air stream, and means for admitting a controlled proportion of comminuted material so that it is dispersed into the air stream for simultaneous condensation with the fibers. Alternatively, the comminuted material can be introduced prior to opening the fibrous materials, so that the means for opening the fibrous materials also mixes in the comminuted material and delivers it to the air stream. In one claim, a brush rotating against a curved lower plate is the opening means.

ARTIFICIAL FILAMENT. Albert Faris Smith (to Canadian Industries, Ltd.). Can. P. 429 135, July 31, 1945. A tapered oriented artificial bristle comprises a mixture of filaments of synthetic linear polyamide and phenol-formaldehyde resin arranged with their portions of maximum and minimum thickness, respectively, parallel, and sealed by fusion at the portions of maximum thickness and through most of their length, but the portions of minimum thickness separable to form a flagged tip. Polyhexamethylene sebacamide is claimed specifically.

I, 5c. Coated or impregnated products

TREATING FIBERS. Waste fibre treatment. R. Pickles & J. Pickles. Brit. P. 567 296. A mass of waste vegetable fibers, 90% of which are not longer than 2 mm. and the rest not exceeding 10 mm., is carded, and then impregnated with a bonding agent in aqueous dispersion. The material is then compressed into sheets, the excess liquid is expressed, and the product is dried. 50-80 lb. of

the fibers are used to 50-20 lb. of the dry weight of the bonding agent. The material has great strength, and a high resistance to tearing.

BONDING FIBERS. Bonding of carded fibres. Johnson & Johnson, Ltd. Brit. P. 567 316. British patent 468 529 describes how carded fibers are bonded at set spaces, the distance between the spaces being not greater than the average length of the fibers. The binder now employed is a polyvinyl acetate emulsion with a water-insoluble plasticizer which is compatible with the acetate, and a filler or pigment. The need for rubber as a binder is thus eliminated and a slightly stronger web is produced.

LAMINATED SHEETS. Laminated fibrous sheet manufacture. Frank Edward Donovan. Can. P. 429 081, July 31, 1945. Tear-resistant reinforced laminated fibrous sheet is made by coating at least one of the adjacent surfaces of two fibrous webs with an adhesive binder; forming a loose, fluffy mat of tangled waste sisal fibers on a conveyer by carding a dense tangled mass of the short fibers on the upper portion of a rotating carding drum, throwing the mass of tangled fibers from the drum, and allowing them to float through the air onto the conveyor, which is travelling fast enough to spread out the fibers in a very thin mat; and feeding the fibers thus arranged into the space between the fibrous sheets before they are put through the combining rolls, which compress the sheets and fibers until the sheets are bonded face to face through the openings of the network of fibers, and until the fibers are themselves bonded together and to the fibrous sheets. The thickness of the laminated sheets is not increased appreciably by this process.

II. INORGANIC FIBERS

II, 3. Applications as fibers

II, 3b. Plastic filler

FIBER TUBING. Fibre conduit process and machine. Clarence J. Lemont (to Canadian Line Materials, Ltd.). Can. P. 429 137, July 31, 1945. Fiber tubing is manufactured in a machine which submerges a perforated mandrel in a mixture of fibrous asbestos or other fiber and binder, rotates the mandrel and simultaneously creates a partial vacuum within the interior of the mandrel, and withdraws the mandrel. The tubing may be formed by applying pressure to the coated mandrel by either of two methods described in the claims cited.

II, 3c. Coated or impregnated products

FRICTION MATERIAL. Friction material making method. Donald S. Bruce & Ralph T. Halstead (to Johns-Manville Corp.). Can. P. 429 013, July 24, 1945. Sheets, slabs, and laminates of friction material are made by dry mixing a composition including asbestos fibers, powdered thermosetting phenolic resins, and friction material; dampening the mixture with about 10% by weight water; mixing the wet mass until the water is absorbed;

fluffing the damp mixture; depositing the fluffed mixture in a layer on a felting member (in the case of laminates this process is repeated as often as required); applying pressure; and drying at moderate temperatures to develop a preliminary bond before subjecting the whole to a final pressure and heat-curing treatment.

III. NONFIBROUS MATERIALS

COATINGS. Laminants and coatings for papers, plastic films and metal foils. F. B. Speyer, American Resinous Chemicals Corp. *Paper Trade J. 121,* TAPPI 3-6 (July 5, 1945). A review of the properties and methods of applying lacquers, hot melts, and laminating solutions (pressure sensitive adhesives, solvent active adhesives, and fusion type adhesives) correlates the properties of these materials with the properties of the base surfaces, which include cloth, to show how a scientific knowledge of the physical and chemical properties of the available formulations eliminates guess work in choosing the best combinations. Tables show the materials commonly used in resinous formulations; the surfaces to which adhesion is sought; the advantages of hot melts over solution coatings, a summary of the work done on fusion lamination; and the adhesion, heat stability, color, water-resistance, resistance to grease and oil, flexibility, odor, stability, and pressure sensitivity of 22 resin compositions and 8 plastic films, 5 papers, metal foils, cloth, glass, and wood.

PULP PLASTICS. Low-resin-content and resin-free pulp plastics. S. L. Schwartz, J. C. Pew, & H. R. Meyer, Forest Products Lab., U. S. Dept. Agric. *Paper Trade J. 121,* TAPPI 61-4 (August 16, 1945). Molded plastics, whose properties are given in detail in a table, have been made from high-yield wood pulps by incorporating little or no phenolic resin. Compared with plastics containing as much as 40% phenolic resin by weight, their ultimate tensile and compressive strengths were lower, as was also their resistance to water-absorption, but their toughness was improved. Some plastics of moderate strength and good resistance to water were obtained with small amounts of non-phenolic resins.

III, 1. Plastics, resins, rubber

POLYMER DEGRADATION. The degradation of high polymers. R. F. Tuckett, Cambridge University. *Trans. Faraday Soc. 41,* 351-9 (July 1945). Mathematical. "The random degradation of high polymers . . . can be solved by . . . [statistical] technique . . . for determining the partition of energy amongst a set of harmonic oscillators. The Darwin-Fowler method is used in which the various quantities are expressed as coefficients in related power series: these are then evaluated as contour integrals by the method of steepest descents. The size distribution functions for the degraded material are then derived directly together with the various average molecular weights by use of different operators . . . [T]he extension to systems . . . initially polydisperse is immediate and the method

is then applied to a specific case of non-random degradation in which preferential splitting at the ends of the chains occurs. The kinetics of this type of degradation, which is found experimentally, are also discussed."

SYNTHETIC RESINS. Application of synthetic resins to textile fibres and fabrics. D. H. Powers, Monsanto Chemical Co. *Can. Textile J. 62,* No. 12, 34, 48 (June 15, 1945); *Rayon Textile Monthly 26,* 347-8 (July 1945). The commonest types of synthetic resins that may be applied to fabrics as (a) coatings to make them water-retardent, fireproof, etc.; (b) dispersions impregnated to make them wear better; or (c) unpolymerized monomer which is polymerized in the cloth to make them water-proof, are discussed under those heads.

III, 1a. Cellulose derivatives

CELLULOSE ESTERS. Process of preparing mixed polycarboxylic acid esters of cellulose. Frank J. Kaszuba (to General Aniline & Film Corp.). USP 2 380 896, July 31, 1945. Acyl cellulose polycarboxylates are prepared by esterifying a partially acylated cellulose with a polycarboxylic acid compound (a polycarboxylic acid anhydride or a polycarboxylic acid chloride) containing from three to six carboxyl groups in the presence of about eight to sixteen parts by weight of 1,4-dioxane to one part by weight of the acyl cellulose.

CELLULOSE ESTERS. Cellulose ester production. Henry Dreyfus. Can. P. 428 623, July 10, 1945. Mixed esters of cellulose are made by esterifying a cellulose ester of a lower aliphatic acid at a temperature between 50 and 100°C. with an anhydride of an aliphatic acid containing at least twelve carbon atoms in a solvent which dissolves or swells the lower aliphatic acid ester, *e. g.,* 90-95% ethylene dichloride and 10-1% acetone, and which contains 0.1-2% of a metal halide catalyst and 0.1-1% hydrohalide acid, *e. g.,* zinc chloride and hydrochloric acid, both proportions being calculated on the weight of the cellulose ester used as starting material.

CELLULOSE ESTERS. Cellulose derivative production. Henry Dreyfus. Can. P. 428 624, July 10, 1945. Mixed cellulose esters are made by esterifying a lower aliphatic acid ester of cellulose containing free hydroxy groups in a liquid medium comprising a carboxylic acid anhydride of less than six carbon atoms and methylene or ethylene dichloride, having in solution a ferric, stannic, or zinc halide. The liquid medium is of such a nature that on the completion of esterification it serves as a solvent for the mixed ester formed.

CELLULOSE DERIVATIVE. Polysaccharide derivative manufacture. Paul Karrer (to Hoffmann-La Roche, Ltd.). Can. P. 428 839, July 17, 1945. Polysaccharide derivatives are made by partly etherifying a polysaccharide with a compound containing a

hydroxy and an acid group, partly esterifying the partly etherified compound with halogeno-sulfonic acid, and reacting the compound formed with alkali. Specific claim is made to (a) cellulose with its hydroxy groups partly etherified with beta-hydroxy-ethane sulfonate and partly esterified with sodium acid sulfate, and (b) starch partly etherified with sodium glycollate and partly esterfied with sodium acid sulfate.

CARBOXYMETHOCEL SODIUM AND ALUMINUM SALTS. Bulletin of The Dow Chemical Co., Midland, Mich., n. d.; gratis. The properties and typical formulations of Carboxymethocel-A and -S, which are recommended for use as protective colloids, pigment-dispersing agents, adhesives, warp-sizing agents, and for many non-textile uses, are described.

III, 1b. Polymer resins; natural resins

FUZON-O. Bulletin of the Stanley Chemical Co., East Berlin, Conn., n. d.; 8 pp.; gratis. Fuzon-O is a vinyl resin coating for various types of fabrics.

III, 1c. Condensation polymer resins

MELAMINE RESINS. Some recent aspects in the finishing of textile fabrics with urea and melamine resins. Alden D. Nute, American Cyanamid Co. *Am. Dyestuff Reptr. 34,* P230-1 (June 4, 1945). Compared with the urea resins for finishing textiles, melamine formaldehyde resins are more stable to storage, are easier to handle, are twice as effective weight-for-weight, and give a fabric that is more nearly shrink-proof and not weakened by washing with chlorinated water, so that the antichlor step can be omitted in laundering. Fabrics treated with melamine resins are resistant to mildew and are little faded by laundering. The resins are best applied by a heavy pad mangle. 750,000 Yards of 21.5 oz. all-wool O. D. woven blanket fabric was coated with melamine resins for the U. S. Army in 1943.

RESINS. Condensation of formaldehyde with urea and melamine. W. Feast. *British Plastics 17,* 36-44 (January 1945) & 66-73 (February 1945); ab. *Modern Plastics 22,* No. 11, 55 (July 1945). The mechanism of the reactions between formaldehyde and urea, and between formaldehyde and melamine; and the structure of the polymers are discussed.

POLYMER. Polyester and product. Robert Edward Christ & William Edward Hanford (to Canadian Industries, Ltd.). Can P. 428 967, July 24, 1945. Claim is made to the product and "process of increasing the molecular weight and toughness of linear polymers having a unit length of at least seven and containing active hydrogens and carboxylic acid ester linkages in amount from about 40 per cent to 100 per cent of the linkages uniting

the structural units of the polymer which comprises heating said polymers to reaction temperature, with an organic compound having as its sole reacting groups two -NCX groups where X is a chalcogen of atomic weight below 33".

RESIN. Condensation product. Gaetano F. D' Alelio (to General Electric Co., Ltd.). Can. P. 429 128, July 31, 1945. A resin comprises the condensation product of an aminotriazine, an aldehyde, and a halogenated amide (alpha-, beta-, or alpha, beta-) containing at least one amide group. The resin is made by effecting a partial reaction between, *e. g.,* melamine, urea, and formaldehyde in the presence of ammonia and a fixed alkali as catalysts; and then adding a small amount of a chlorinated acetamide to intercondense with the partial condensation product.

POLYAMIDE. Polymeric product. Paul Rolland Austin (to Canadian Industries, Ltd.). Can. P. 429 134, July 31, 1945. Tubing of synthetic linear polyamide is oriented and its wet-bursting strength is increased by subjecting the solid, unoriented tubing to stretching by an expansive force applied inside it. The force is applied until the circumference and length of the tubing are both increased at least 50%.

III, 2. Adhesives; gums; starches

PLASTICIZED RESIN. Plasticized resin compositions. Harry Kline (to Bakelite Corp.). USP 2 380 599, July 31, 1945. A heat-hardenable varnish for laminated materials comprises in solution the resin produced by the ammonia-catalyzed reaction of formaldehyde with a cresol, a xylenol, a mixture of cresols and phenol, or mixtures of xylenols and phenol; and a plasticizer comprising 10 to 30% on the total solids content of the composition of methyl abietate.

III, 3. Surface-active compounds, textile assistants

CHLORHYDRIN SULFONATION. Hyym E. Buc (to Standard Oil Development Co.). Can. P. 428 729, July 10, 1945. A compound having wetting and detergent properties is made by converting an olefin containing at least six carbon atoms into the corresponding chlorhydrin, sulfating the chlorhydrin with sulfuric acid at a temperature not over 25°C., and neutralizing the sulfate with an alkali or an amine.

TREATING TEXTILES. Textile material processing. George W. Seymour & Walter Brooks (to Camille Dreyfus). Can. P. 428 892, July 17, 1945. Textile materials are conditioned by applying to them a fluid containing mineral oil; an oxidized vegetable oil; and an acyl derivative of an ester of a hydroxylated higher fatty acid in which the acyl radical "is derived from a lower fatty acid, oleic acid, triethanolamine and oleyl alcohol". The

conditioning liquid may also contain a dibutyl- or a diamylphenol.

DETERGENT. Wetting and cleansing agent. Wilfred S. Martin (to Proctor & Gamble Co. of Canada, Ltd.). Can. P. 429 024, July 24 1945. The sudsing and cleansing properties of a water-soluble salt of an alkyl sulfuric acid containing eight to eighteen carbon atoms in the alkyl radical are improved by mixing with the detergent 3 to 75 parts of unsulfated saturated aliphatic alcohol. The alcohol may be a primary aliphatic alcohol containing eight to fourteen carbon atoms or a secondary aliphatic alcohol containing eight to twenty-five carbon atoms; and the original detergent may be in the dry form.

ESTEROL WETTING AND REWETTING AGENT. Bulletin of L. Sonneborn Sons, Inc., New York, 1945; 4 pp.; gratis. Esterol is recommended for sanforizing, vat dyeing, fulling worsted, rayon-warp sizing, and general dyeing operations.

IV. FIBER TO YARN

YARN NUMBERING. "Integral" yarn numbering system. A proposed new direct system. Anon. *Textile Mfr. 71,* 319 (August 1945). A new yarn-numbering system proposed and explained in a booklet by Squire Blackshaw, Quebec Provincial Arts and Crafts Schools, Canada, suggests the following, which would give integral numbers for the counts of laps, slivers, and coarse rovings, and decimals for those of fine rovings and yarns: *table of length*—100 yd. = 1 wraplet, 7000 wraplets = 1 wrap; *table of weight*—437.5 grains = 1 oz., 16 oz. = 1 lb.= 7000 grains; *yarn number formula*—weight in lb. of 1 wrap = yarn number; 1 wrap = 700,000 yd., weighing 1 lb. = No. 1; *yards per grain* = yd. per wrap/grains per pound = 100 yd. per grain. The use of the system in mills is said to be illustrated in the original booklet.

ELASTIC THREAD. Sterling W. Alderfer (one-half to Edward D. Andrews). USP 2 380 373, July 31, 1945. A process for use in the manufacture of elastic fabrics comprises arranging elastic filaments close to each other, coating the filaments with enough viscous adhesive to hold the filaments together as a sheet, rendering the surfaces of the sheet nonadhesive, separating the sheet into its individual filaments while the coating below the surface is still tacky, and wrapping a "textile covering" about the filaments. The thread is held by the tacky coating.

IV, 1. Preparation for spinning

FLAX BLEACHING. Some flax fibre characteristics: their bearing on the bleaching process. S. A. G. Caldwell. *Dyer & Textile Printer 92,* No. 8, 291 (October 13, 1944), through *Am. Dyestuff Reptr. 34,* 228 (June 4, 1945). The structure of the flax fiber is discussed as it affects the dressing and bleaching operations, the methods of processing the fiber, and the appearance of the finished linen. Retting is used customarily to remove the epidermis—water retting in its various forms and dew retting are described—but decortification can be used. This last consists of boiling roving with caustic soda or soda ash. The boiled roving can be spun wet to give a light colored yarn that can be bleached to a full white, if desired.

JUTE MANUFACTURE. Technical developments in jute manufacture. II. Carding and preparing. S. A. G. Caldwell. *Textile Mfr. 71,* 339-40, 344 (August 1945). Modern machinery makes the carding and preparation of jute very efficient and cheap. Lighter carding is being adopted. Usually two finishers are furnished each breaker, and five- and six-pair cards are coming to the fore. Shorter drafts are being used. Cards are being equipped with a large bottom feed roller with a pinned surface and with an unpinned top roller. Both large feed cans and sliver rolls have their advocates. The most outstanding development in jute preparation is the Eves double-crank push-bar patent for controlling the fiber in drafting. The Eves machine is described at some length, as are also a five-pair full circular jute-finisher card made by J. F. Low & Co., Ltd., and a modern roll former made by Douglas Fraser & Sons, Ltd. These two last are illustrated.

RE-COMBING. Is re-combing always essential? Durant Anthony. *Can. Textile J. 62,* No. 17, 42, 48-9 (August 24, 1945). Certain types of worsted yarns do not have to be as clean as they are made by re-combing after dyeing, but can be subjected to two or more gillings to give a satisfactory product, provided certain precautions are observed. Some of these precautions are: keep the pins in the fallers in good condition and set them far apart; apply short drafts; remove faults when they are seen; do not apply the material too deeply into the pins at the first box; and apply oil at the first box in the form of an emulsion.

WOOL OILING. Automatic wool oiling. R. I. Smith. *Textile Mfr. 71,* 320 (August 1945). Consideration of the pros and cons of oiling wool automatically leads to the conclusion, "The growing popularity of various forms of pneumatic conveying and piling, together with automatic feeding and the interconnection of various machines, makes automatic oiling particularly desirable, apart from any virtues inherent in the process itself", and the virtues are many.

SHRINKING YARNS. Shrinking cellulose acetate yarns, etc. F. B. Hill. Brit. P. 567 107. In a process for shrinking yarns, etc., having a basis of an organic derivative of cellulose, the material is treated with a mixture of an excess of

methylene chloride with ethylene dichloride. In one example, a dry-spun cellulose acetate yarn, which has been stretched in wet steam to ten times its original length, is immersed in hank form in a bath containing 64% methylene chloride and 36% ethylene dichloride at a temperature of 19°C. After 20 seconds the yarn is removed, rapidly washed with carbon tetrachloride, and dried.

CARDING. Modified card taker-in region. J. Locke (to The British Cotton Industry Research Association). Brit. P. 567 365. A device for obtaining improved cleaning action in the taker-in region of a carding engine has a control providing an enclosed space below the striking face of the dish plate and having an upper surface at an acute angle to the taker-in to form a converging wedge toward the taker-in, and also a striking edge. This arrangement, which temporarily traps the heavier trash particles after they have been struck from the feed region, has no deleterious effect on their separation and deposition. Cooperating with the control is a member to collect the cotton projected into the space below the taker-in. The length of arc which is "open" between the control and the nosepiece of the collecting member may be varied to suit different requirements.

DINGS MAGNETIC PULLEYS AND PULLEY TYPE SEPARATORS. CATALOGUE 260, Dings Magnetic Separator Co., Milwaukee, Wis., n. d.; 29 pp.; gratis. A table of factors for use in selecting magnetic pulleys to process various materials lists cotton seed and flax seed.

IV, 2. Spinning, doubling, twisting, winding

IRREGULARITIES IN YARNS. An analysis of the irregularities in worsted yarns and slivers. G. Waggett, Leeds University. *J. Textile Institute 36,* T131-46 (June 1945). Yarns made from a series of blends of 64s Australian wool, obtained by dividing the wool into two lengths on a Lister comb and blending the two constituents in various proportions, and drawing and spinning on the French system, were tested for regularity with the B. C. I. R. A.'s apparatus. Wilkison tufts were extracted at points of outstanding irregularity, and the number of fibers in each tuft was counted. In this way it was found that the thin places contained shorter yarns than the thick places—this contradicts Ball's hypothesis, but may not be irreconcilable with it. Blends containing a high proportion of long fiber gave more diverse staple diagrams at thick and thin points and the yarns themselves were more uneven. All these results can be explained by movement of the fibers during drafting; thus, for good yarns the fibers should be as uniform as possible and drafting should be reduced to a minimum. Eight diagrams and nine references are given, as well as a description of the various methods available for testing regularity of yarns and slivers.

TWISTING MACHINERY. Modern yarn twisting machinery. H. O. Nelson, Whitin Machine Works. *Can. Textile J. 62,* No. 15, 39-40, 44 (July 27, 1945); No. 17, 46-7 (August 24, 1945). "Mechanics of yarn-twisting equipment for all types of textiles are discussed by leading authority who traces the mechanical and other developments leading up to the high-speed, large package machine", and points out the "important mechanical features of modern twisters and accessories". This discussion is concerned with products of the Whitin Machine Works.

SPINNING CAGE. Cage for rayon or the like. Reginald W. Hoagland (to Industrial Rayon Corp.). USP 2 380 526, July 31, 1945. In a spinning cage for yarn, filament or the like, composed of numerous annularly spaced sets of bars constituting the periphery of the cage and centered and rotatable as sets about a common axis, in which cage the yarn rests on all the sets of bars and progresses axially along a generally helical path by rotation of the sets of bars about the axis and the relative movements of the bars of the individual sets with respect to each other, the bars of each set are supported by end extensions of the bars to provide rotary and relative axial movements for the bars of the respective sets through the bearing thus afforded.

ROLLERS. Non-crumble cork-covered rollers. T. W. Holt. Brit. P. 566 892. Draft rollers of speed and spinning frames have an extruded sleeve of ground cork, bonded by polyvinyl chloride, polystyrene, methyl methacrylate, or a mixture of polyvinyl acetate and chloride, placed on a metal core. The roller is claimed not to crumble during service.

TUBE HOLDER. Tube holder for winding spindle. A. H. Stott. Brit. P. 566 940. An easy way of holding tubes on a winding spindle by having grooves which accommodate blades projecting from an adjustable collar on the spindle is provided. The blades project above the spindle to engage and hold a paper tube against rotation.

ROVING GUIDE. Guide for reducing variability of rovings. A.G.-Joh. Jacob Rieter & Cie. Brit. P. 567 102. A roving or thread guide for spinning or doubling frames has a plate provided with two vertically displaced bores between which is a partition facing the roving feed. The length of the partition is at least equal to half the length of the individual fibers. The two rovings pass through the bores, the partition carefully separates them and guides them above and below each other. The discharge side is furnished with a similar partition. The guide prevents entanglement and reduces irregularities in the material.

STRAND TENSIONING. Strand tension controlling method. Sherman Leidich Gerhard (to Dominion Rubber Co.). Can. P. 428 835, July 17, 1945. The tension of an advancing strand is kept

constant at any desired value by providing a rotating drum, exerting on it a constant torque tending to rotate it about its central axis, supplying a strand approaching the drum along its axis of rotation and moving outward to the periphery to drag over an arc of the drum surface so that this arc of contact varies as the drum rotates, and pulling the strand from the drum in a direction to decrease this arc while the torque tends to increase it.

TENSIONING DEVICE. Winding machine tensioning device. Martin J. Kirk (to Johnson Laboratories, Inc.). Can. P. 429 163, July 31, 1945. Tensioning devices for coil-winding machines include in combination a support for holding a filament supply spool stationary, a removing arm mounted for angular movement around the axis of the support (this arm has a filament guiding device for angular movement around and spaced from the periphery of a supply spool on the support), and friction devices for restraining free angular movement of the arm. The support includes a stationary tube, a rod movable into and from the tube, and a bearing for the arm carried by the rod. The tube and rod have cooperating and readily separable devices for holding the rod in the tube.

THREAD TRAVERSE DRUM. Walter Siegenthaler (to Maschinenfabrik Schärer). Can. P. 429 175, July 31, 1945. In a thread-traverse drum, particularly for winding machines, claim is made to an assembly of three circumferentially grooved main drum parts to provide a middle part and two end parts of the traverse drum, and to a carrier member to support the assembly. The end parts of the drum adjoin the middle part and form by their grooved portions along with the grooved portion of the middle part two crossing helical grooves for reciprocating the thread for producing a crosswind, while the ends of the grooves merge in each other for forming two points of reversal so as to bridge the thread guideway at the junctions of the groove ends.

IV, 2b. Wool; worsted

WOOL PROCESSING. Wool manufacturing on the cotton system. Anon. *Am. Wool Cotton Reptr. 59,* No. 29, 13, 15 (July 19, 1945). Wool and worsted yarns can be made on modern machinery for making cotton yarns at a lower cost because the wages are lower, the investment per unit of production is smaller, and the machinery costs much less. The yarns so made are perfectly satisfactory. Woolen manufacturers are urged to do research on machinery, lest the high cost of wool allow synthetics to replace it to a large extent.

IV, 2d. Rayon

PROCESSING SYNTHETICS. More mixing and less handling of fibers. Anon. *Am. Wool Cotton Reptr. 59,* No. 34, 7-8, 25 (August 23, 1945). Many synthetic fibers are being harmed in being handled just like natural fibers. Blending should be done before the carding and account should be taken of the moisture content of the fibers in making blends; beater speeds should be reduced since the picking machines need only mix the already open fibers; some form of roller clearer card is to be preferred to the ordinary flat-top card; the number of doublings should be reduced; slivers should be no heavier than 50 grains; super draft fly frames and long draft spinning are to be preferred; and a single roving operation is adequate. All these points are discussed.

SYNTHETIC YARNS. Synthetic yarn manufacturing a growing industry. Bill McComb. *Rayon Textile Monthly 26,* 353-4 (July 1945). Thus far manufacturers of synthetic fibers have not explored the possibilities of their products, because they have limited them to forms that can be worked on cotton, wool, or even silk throwing machinery. From now on, however, close cooperation between fiber and machinery manufacturers will change this state of affairs, and the "spinning mill of the future" probably will have equipment for spinning from tow, for automatic blending, for cleaning the opening room and supplementary pickers rapidly whenever the blend is changed, for carding large packages, and for spinning yarns from either single or double rovings as desired. The spinning machinery, especially, will be extremely flexible.

IV, 2e. Winding

WINDER. Constant speed winder. E. Kinsella (to British Celanese, Ltd.). Brit. P. 567 110. A method of winding yarn at a constant speed comprises feeding the yarn to a package driven by a variable speed control driven through a slipping drive whose slip is controlled in accordance with the divergence of the actual growth of the package from an arbitrary pre-selected growth which is greater than the actual growth. The peripheral speed of the package is maintained constant despite the increase of its diameter.

TRAVERSING MECHANISM. Traversing mechanism of winding frame. G. S. Fraser (to D. Fraser & Sons, Ltd.). Brit. P. 567 122. The traversing mechanism on a winding frame has a rotary drum having two noncrossing helical grooves extending from the center towards opposite ends of the drum. An auxiliary guide rotates on an axis parallel to the drum and has two scroll cams which engage the yarn alternately; they are angularly displaced approximately 180° about the axis of rotation of the auxiliary guide, so that the yarn slides to and fro through practically the entire length of its traverse.

TEXTILE MACHINE. William J. Elvin, Raymond D. Reel, & Elmer R. Stahl (to Camille Dreyfus). Can. P. 429 205, July 31, 1945. Apparatus for winding textile packages comprises a

spindle for holding and rotating the package to be wound, means for driving the spindle at variable speeds, means for controlling the driving means, a positive driving connection between the spindle and the control means to hold the speed in predetermined relation to the number of revolutions already executed by the spindle in winding the package, and means independent of the spindle for driving the control means in the interval between the winding of successive packages in a direction opposite to that in which it is driven by the positive driving connection in order to give the requisite speed to the spindle at the beginning of the winding of the next package. Specific machinery—a reversible motor, a 2-way clutch, a variable speed transmission having a constant speed shaft, etc.—are mentioned in the other claims.

IV, 4. Products (thread, yarn, cord, etc.)

YARN COUNTS. Proposal for a reduced range of yarn counts. A. W. Bayes. *J. Textile Institute 36,* P87-92 (July 1945). Since the range of cotton yarn counts and cloth structures in use before the war gave differences in the fabric that cannot be judged by sight and touch, a reduced range is suggested. The particular one advocated here would give 14 instead of about 30 different counts between 10 and 100, and is based on Fechner's law ($\log A = n \log B + \log C$, where A is the measured characteristic, *e. g.,* yarn count, B is the ratio between adjacent grades, n is the number of grades above the basis, and C is the measured characteristic of the basis class), with 1.189 as the value of B. Application of the same sort of series to ends and picks per inch, using B = 1.094, would be advantageous also. Other systems of grading based on Fechner's law, many of which are discussed briefly, include the Continental system of grading the fineness of wool, the counts for filament rayon yarns in the U. S., and the gauging of wire.

IV, 5. Applications as yarn

ROPES. Ropes with improved handle, wet tenacity, etc. D. Finlayson & R. G. Perry (to H. Dreyfus). Brit. P. 567 338. Ropes containing regenerated cellulose fibers are impregnated with a solution of a water-resistant organic derivative of cellulose in non-aqueous liquid at 120°C., and the liquid is afterwards evaporated. The handle, wet tenacity, and splicing properties of the ropes are improved greatly.

V. YARN TO FABRIC

V, 3. Weaving

WEAVING RAYON. Labour and other problems in store for weavers. Louise Andrée Coury. *Silk & Rayon 19,* 632 (June 1945). Weaving sheds have been allowed to deteriorate so far in the war, and labor has been so widely dispersed—at least 50% of the 25,000 skilled laborers needed were either in the Services or working in war factories at something other than weaving—that the British rayon industry will have a hard time getting started up after the war. The need for modern, more expensive machinery, and the inevitable government restrictions make the prospects still more bleak.

V, 3a. Looms

LOOM. A Lancashire loom for silk and rayon fabrics. Anon. *Silk & Rayon 19,* 650-1 (June 1945). A new rayon and silk loom made by W. B. White & Sons, Red Scar Loom Works, Colne, is illustrated and described quite fully. It is a dobby loom, has a reed space of 48-in. and a speed of 160 picks per minute, can weave 40 shafts, and is provided with a novel positive take-up deriving its motion from a small cam on the low shaft that contacts with a bowl in a horizontal shaft parallel with the outer loom frame.

RAYON WEAVING. Templing of rayon fabrics. William Forsyth. *Textile J. of Australia 20,* 166, 168 (June 20, 1945). In converting the Lancashire loom from the weaving of wool and cottons to the weaving of rayons, templing usually cannot be dispensed with, but the spikes on the rollers have to be covered with rubber, because the points of the spikes damage the fibers; tapered rollers are best; the inside adjustable roller bearings should be made of lignum vitae; and the " 'beat up' is arranged in such a manner that . . . the reed is separately controlled, and is allowed to 'beat up' more slowly."

BEAT-UP MECHANISM. Beat-up mechanism of looms for weaving. Derrick Walter Shimwell. USP 2 380 798, July 31, 1945. In a loom-beat-up mechanism the beat-up comb is mounted between upstanding parts of two frames, one at each side of the loom. The base part of each frame provides at its rear end a journal bearing for a crank pin, and is supported at its forward end by an arm that can move back and forth about a fixed fulcrum to opposite sides of a vertical position and that dwells or moves slowly at its extreme positions while the crank pin rises and falls respectively through a relatively large angle. This arrangement ensures the relatively rapid upward movement of the beat-up comb to effect beat-up and to leave the warp shed, and then after a movement backwards clear of the warp shed, a relatively rapid downward movement to enter the warp shed adjacent to the reed.

SHUTTLELESS LOOMS. Shuttleless smallware looms. W. Williamson (to M. Wright & Sons, Ltd.). Brit. P.'s 566 922 & 566 944. A loom having two weft layers which enter from the same edge of the warp, each to insert a double pick, and a selvedge thread common to both bights inserted through both bights at the return edge to lock the double picks, has shedding apparatus for

making a double shed, the weft layers being arranged to enter one into each part of the shed, to produce a double fabric with the front warps interlaced with double picks of a front weft, rear warps interlaced with double picks of a rear weft, binding warps binding the two wefts together, and a common selvedge thread locating the bights of the double picks at the return edge. The fabric is claimed in Brit. P. 566 944.

V, 3c. Control devices; stop motions; bobbin selectors

WARP STOP MOTION. Mechanical warp stop motions. VI. I. Laird. *Textile Mfr. 71,* 336-8, 344 (August 1945). The Swiss mechanical warp-stop-motion harness and the Saurer high-speed ribbon loom warp-stop-motion are described with the aid of nine diagrams.

LOOM. Weft replenishing, pick-and-pick, filling mixing loom. Albert Palmer & Elliot A. Santon (to Crompton & Knowles Loom Works). USP 2 380 544, July 31, 1945. In a weft replenishing loom with a pair of shuttle boxes connected to an actuator mechanism which causes the boxes to shift in successive four-pick cycles in each of which the shuttle boxes are up for two successive picks and then down for the next two successive picks, there is at the end of the loom opposite the shuttle boxes a number of stacks of reserve bobbins, a bobbin releaser for each stack, a selector common to the releasers and able to register with the releasers one at a time, means for positioning the selector including a cam operatively related to the selector and having as many steps as there are stacks of bobbins, and an operator for the cam connected to the actuator and moved by it on each four-pick cycle of the boxes to advance the cam and cause it to move the selector progressively with respect to the releasers and in register with them one at a time and in a given sequence.

BOBBIN SUPPORT STOP. Albert Shoesmith (to Draper Corp.). USP 2 380 709, July 31, 1945. In a bobbin-changing loom there are: a hopper stand, a swinging bobbin support mounted on the hopper stand for supporting bobbins in the bobbin-transferring position, an abutment on the hopper stand for limiting the swinging movement of the support to the bobbin supporting position, a member supported by the abutment and located between the bobbin support and the hopper stand, and resilient means carried by the member to engage the bobbin support to limit its movement out of bobbin supporting position.

BUFFER. Buffer for loom bobbin receivers. Richard G. Turner (to Crompton & Knowles Loom Works). USP 2 380 807, July 31, 1945. In a weft replenishing loom having means for directing an empty bobbin toward a bobbin can with a bead around its upper edge, there is a bobbin buffer having on its body means to receive the bead and to prevent accidental upward displacement of the buffer, and a resilient member lying partly in the path of the discharged bobbin to retard its movement. The bead-receiving means may be a longitudinal groove or slot.

STOP MOTION. Loom-stop motion for faulty shedding. R. E. Bridge, Brit. P. 566 816. A loom-stop motion, which operates if an imperfect shed is formed, has a tripper that is engaged by a bunch of warp threads, a cam which is turned in one direction or the other according to the direction of the shuttle's movement and which releases a plunger that is actuated by a spring to cause a lever to turn on its pivot and project a double-hooked member into the path of the ballooning weft thread which is broken and brings about the stopping of the loom in a known manner.

V, 3d. Processes

HARNESSES. Adaptation of jacquard harnesses. J. H. Yates. *Textile Mfr. 71,* 276-80 (July 1945). 324-8 (August 1945). The ordinary straight-tie Jacquard harness can be adapted for differences in thread counts between reed and harness, but the cast out ties should be systematized for each stett on each reed, and new harnesses should be ordered if the amount of special business warrants them. Border patterns can be woven on a straight tie harness under certain conditions; figured squares (handkerchiefs, table napkins, etc.) can be made "with careful planning and a little ingenuity" if the reed is sufficiently lower than the harness stett that cast-out can be used for the borders; and the width of the repeat can be increased for making spot designs, all-over designs, and ordinary and figured-stripe designs. The calculations involved are illustrated with numerous examples, sample design cards and fabrics are pictured, and eight cast-out charts for 400 hook jacquards for the most generally used harness stetts are given.

RAYON PILE FABRICS. Features in the construction of rayon pile fabrics. Shed Manager. *Silk & Rayon 19,* 670, 672-4 (June 1945). Rayon pile fabrics can be made on rayon ground cloth for velvets and on cotton for plush. A typical velvet construction and a typical plush one are diagrammed. Directions are given for the weaving, sizing, and shearing of piled fabrics. Three diagrams show the setting of the loom, and the outside wooden under-pick motion as seen from the side and from the front.

SELVEDGE CONTROL. Control of selvedge threads on looms. Sulzer Freres Societe Anonyme. Brit. P. 566 975. Binding threads are kept from changing their twist during the running of the loom by feeding them as described. The warp threads are run from the beam over the back rail through the stop motion, heddles, and the reed to the fabric.

The binding threads are run from the bobbins through the brakes and eyes; from there, together in a slit, through a spring plate of the stop motion, and through an eye; from there, separately through guide eyes of a rotating disc; and finally together through the reed to the fabric. The bobbins are mounted in a carrier rotated by two wheels that revolve when the threads are drawn from the bobbins and that are braked slightly by springs. The axles of the bobbins are in stirrups pivoted on the bobbin carrier and rotating around axles at right angles to the axles of the bobbins. The bobbin carrier is pivoted on a pin connected to a support and has fixed on it a wheel geared to wheels carried on the axles of the stirrups. For each rotation of the bobbin carrier, the stirrup axles are translated through this gearing.

V, 3e. Defects

DEFECTS. Loom craft. II. Consideration of the lesser known causes of broken ends. W. Middlebrook, Brocklehurst-Whiston Amalgamated, Ltd. *Textile Mfr. 71,* 333-5 (August 1945). The causes of *broken ends,* which are discussed, may be: the use of blunt or loose shuttle tips, rough shuttles (shuttles may be roughened by specks of metal or glue), a shed positioned too low or too high, excessive weighting, a warp beam that siezes, a raceboard with badly worn felt, shafts that catch on each other, sharp reeds or reeds having warp size on them, cops projecting above or below the shuttle, a short perry, or incorrect loom speed; by faulty shuttle flight; the shuttle's bearing down on the bottom shed; or the weather. The causes of *uneven cloth* are: use of unsuitable or worn ropes or chains to control the warp beam, defective beam collars, a beam flange touching the backrest, loose crank arms, reeds of uneven firmness, improperly set frogs (with reference to the reed-case fingers), weft of inconstant diameter, worn ratchet wheels, too high a shaft, slipping take-up rollers, and uneven weights on the levers for holding the cloth roller against the take-up beam; misalingnment of the gudgeons or warp beam spindles; warping of the warp beam or the back roller; and sticking parts where the take-up system is negative.

V, 4. Knitting

REINER TRICOT. Reiner high speed tricot machine. Anon. *Can. Textile J. 62,* No. 17, 40 (August 24, 1945). The RT-1 model high-speed tricot knitting machine manufactured by Robert Reiner, Inc., Weekawken, N. J., is described in some detail with the aid of a picture. It is a two-bar, 28-gauge machine to make fabrice 168- or 84-in. wide. It is 67-in. high with needle bed arrangements approximately 6-in. lower than usual, so that the operator can attend it without using ladders or boxes. "An unusual feature is the incorporation of large size warp spools of 21-in flange diameter which will hold a maximum of 20,000 yards warp length (75 den.), enough to keep the machine in continuous operation for about 20 days

of 3 shifts each . . ." Other distinctive features and safety provisions are pointed out.

KNITTED FABRIC. Knitted fabric with elastic selvage. Robert H. Lawson (to Scott & Williams, Inc.). USP 2 380 768, July 31, 1945. A knitted fabric with an elastic selvage is made by placing a stitch of elastic thread in each wale of the second course, interknitting the elastic thread at spaced wales and floating it across at least three needle wales in at least two courses following the second course, and knitting inelastic yarn in the courses knitted after the float courses—elastic thread is incorporated in at least some of these subsequent courses.

KNITTING MACHINE. Ernest Brooksby & Frederick Edward Deans (to The Bentley Engineering Co., Ltd.). USP 2 380 822, July 31, 1945. An improvement in (or for) a knitting machine consists in the combination of a needle cylinder having on it tricks deep enough to accommodate in each a needle and a transfer instrument, one behind the other in the depth of the trick, but no wider than necessary to accommodate the needle; and a stitch-transfer instrument having its body part received in such a trick and near its end a sheath which embraces the needle. Various types of transfer instruments are claimed specifically, but they are all shaped so as to expand and hold the stitch to enable another needle to enter the sheath and hold the stitch.

KNITTING MACHINE. Wildt and Co., Ltd. Australian P. 119 536. A circular knitting machine with two opposed and superimposed needle cylinders having double-edged needles operated by sliders and transferrable from one needle cylinder to the other has special means for opening the needle latches, which is described and diagrammed in *Textile J. of Australia 20,* 170 (June 20, 1945).

STOP MOTION. Electric stop motion for knitting machines. D. C. Gwillim & W. M. Bird (to N. Corah & Sons, Ltd.). Brit. P. 567 001. A stop-motion mechanism for a knitting machine comprises a dropper supported by the running yarn which moves when the yarn breaks to make or break electric contacts. A slub detector also engaging the running yarn is displaceable by a slub to make or break electric contacts. The dropper and detector have fingers which form a throat for receiving the yarn in threading-up to deflect it into contact with the dropper and detector.

KNITTING. Knitting: elimination of [the] looping operation. C. A. Kaufman. Brit. P. 567 362. The toe of a fully-fashioned stocking formed from flat knitted fabric is closed at its toe and bottom by a single continuous seam. Looping is thus eliminated, and it is claimed that a better fitting toe is achieved.

KNITTING. Knitting: plating mechanism drive. J. C. White (to The Full-Fashioned Hosiery Co., Ltd.). Brit. P. 567 365. A straight-bar knitting machine has a splicing or plating mechanism comprising a friction-rod reciprocated with the tie bar.

Two friction boxes are on the rod, and there are two stops between which the boxes traverse. A connection is provided between each friction box and the carrier, one box driving the carrier to the right and the other to the left. A self-engaging and releasing spring-loaded connection is between each friction box and the tie bar whereby one connection drives first the box to the right until the carrier is arrested by a stop and then disengages, and the other connection drives the other box to the left until the carrier is arrested by another stop and then disengages. It is claimed that more efficient plating is achieved.

HOSIERY. Terry fabric knit in hosiery. E. W. Clarke. Brit. P. 567 620. Terry fabric for hosiery comprises a number of courses knit in rib formation and an integral portion consisting of a number of courses knit to form terry fabric through part of their width and the remainder knit in rib formation.

FABRIC AND KNITTING MACHINE. Isaac H. C. Green (to Hemphill Co.). Can. P. 428 691, July 10, 1945. The product and method of making a plain (not rib) knitted stocking top having a selvage and formed from elastic and inelastic yarns are claimed. An elastic yarn is passed through all loops of an initial inelastic yarn course, several following courses have the inelastic yarn knitted at alternate wales and tucked at intermediate wales with the elastic yarn inlaid to be held in tuck wales, and following courses through the remainder alternately knitted from inelastic yarn drawn into switches at all wales and elastic yarn drawn into independently knitted stitches at alternate wales only.

V, 7. Products; design; construction

ARTIFICIAL FIBERS. Nylon and other auxiliary fibres. L. P. Rendell, Imperial Chemical Industries, Ltd. *Textile J. of Australia 20,* 175-6 (June 20, 1945). The properties of nylon and Ardil, and their possible use with other fibers to form union cloths are discussed. The more conventional union cloths—wool-cotton velours, gabardine, and flannel; linen-wool dress material; cellulose acetate-viscose rayon fabrics; and rayon-silk striped material—are described to give an idea of the range of applications that may be found for nylon and Ardil.

COOLNESS OF FABRICS. How to keep cool. Porosity machine tests six fabrics for coolness. Anon. *Life 19,* No. 1, 42-3 (July 2, 1945). Summer clothing should be made from light-colored, smooth, openly woven fabrics, says the short text accompanying normal-scale and magnified photographs of chambray, seersucker, tropical worsted, spun rayon, nubbly rayon, and rayon jersey; and photographs showing that, according to tests made by the U. S. Testing Co., Inc., of Hoboken. N. J., the permeability to air of the cloths increased in the order in which they are listed. (The fabric was clamped in the testing apparatus, air was blown through it, and the height to which a paper cone was blown in a glass cylinder was measured.) These

results are interpreted to mean that rayon jersey is the coolest fabric there is for summer clothing. Oscar Johnston, National Cotton Council disagrees (*Cotton & Cotton Oil Press 46,* 14 (August 25, 1945)).

MARQUISETTE. Heavy viscose marquisette with acetate filling. Anon. *Am. Wool Cotton Reptr. 59,* No. 23, 11-12, 22 (June 7, 1945). A discussion of the points in which marquisette differs from ordinary cloths—transparency gained from the use of fine yarns and open construction, the crossing back and forth of the warp yarns during weaving, and the fact that the filling and warp yarns are not at right angles—includes an analysis of the construction of a heavy viscose marquisette that has a novelty acetate rayon filling yarn made by twisting a single end of 150 denier acetate yarn on a 150 denier acetate base yarn with a delivery rate about twice that of the base yarn, and retwisting this twisted yarn with a single end of denier acetate yarn.

MARQUISETTES. The serviceability of curtain marquisettes. Bess Viemont Morrison & Viola C. Jelinek, U. S. Department of Agriculture. *Am. Dyestuff Reptr. 34,* 328-33 (August 13, 1945). Unfinished all-cotton, plain curtain marquisettes (14); 6 finished, plain marquisettes containing rayon; and 13 finished, all-cotton, plain marquisettes were made into curtains and subjected to parallel user tests. Wear was measured as breaking strength and fluidity after two, four, and six launderings, each spaced two months apart, and was correlated with the initial construction of the cloths and with the construction after washing. All marquisettes woven from fine single yarns are unsatisfactory curtain materials, but a finished marquisette made entirely of cotton or entirely of rayon, woven from yarns having considerable twist, will wear best.

PATTERNS. Recent applications of physics. Lissajous figures. Clark Goodman, Mass. Institute of Technology. *J. Applied Phys. 16,* 434 (July 1945). Lissajous figures obtained in studies of objects undergoing compound harmonic motion, of which some striking photographs obtained by W. B. Hales (*J. Acous. Soc. Am. 16,* 137-46 (1945)) are shown, are recommended to textile designers as an inspiration for patterns.

RAYON LINGERIE. Analysis of rayon lingerie fabric. Eleaner G. McFadden, University of Manitoba. *Can. Textile J. 62,* No. 17, 38, 49 (August 24, 1945). Twenty-six fabrics used for the manufacture of costume slips were tested for width, weight, thread count, yarn twist, abrasion resistance, breaking strength and elongation, resistance to seam slippage, and dimensional restorability in laundering; the tests were made before and after five, ten, and fifteen launderings. Plain woven fabrics showed higher resistance to abrasion than fabrics with satin, twill, or brocade weaves; break strength and slippage decreased and increased, respectively, after washing; fabrics with low thread counts made from low-twist yarns were unsatisfactory regardless of

weave; and no fabric was suitable in every respect for slips. The data on the yarns, cloth construction, and the results of the tests, which are omitted from the article, are available from *Can. Textile J.* or from the author.

BANDAGE MACHINE. Bandage making machine. Henson H. Brown. USP 2 380 823, July 31, 1945. An improvement to the Flynn patent (2 196 296) for making three-part bandages consisting of two tabs of adhesive connected by row of parallel threads attached to the tabs by their adhesive and a third adhesive tab provided with eyelet loops encircling one of the parallel threads comprises machinery for laying parallel threads on the two parallel tabs of adhesive tape in such a manner that the threads do not necessarily extend the entire width of the adhesive, and on the third tab they engage a part of the surface which may or may not be adhesive.

TEXTILE MANUFACTURE. Cefoil Ltd. Australian P. 119 707. Special ornamental or pattern effects can be obtained by weaving or knitting yarn consisting wholly or partially of soluble alginic fibers, printing desired areas of the fabric to render the alginic fiber resistant to scouring, and scouring the cloth with a suitable solution to leave the threads of insoluble alginic yarn interlaced with the foundation thread in cases where the alginic yarn was inserted as floats or to give openwork effects where the alginic threads were in the body of the cloth.

CLOSING METHOD. Bag tube end closing method. William J. Geimer & Frank R. Linda (to Bemis Bros. Bag Co.). Can. P's. 429 115-6, July 31, 1945. The open end of a flexible walled bag body is closed and sealed by pressing the walls flat with or without folding in the corners to form wings; sticking one-half of a strip of tape longer than the width of the end of the bag to one of the side walls of the flattened end; folding opposite ends or tabs of tape around the edge walls and sealing them to the opposite side wall; folding the remaining half of the tape down over the end of the bag to engage with the previously folded tabs and the opposite wall, and sticking it to them; and then folding the remaining ends or tabs around the edge walls of the bag end into bonding engagement with the opposite wall portion of the tape.

CLOSING METHOD. Bag sealing method. Amund S. Roper (to Bemis Bros. Bag Co.). Can. P. 429 117, July 31, 1945. A filled bag can be hermetically sealed by applying a thermo-plastic or -setting adhesive to parts of the top walls of the bag, folding the bag walls to close them, and then applying heat and pressure to the folded walls against the contents of the bag, so that the adhesive liquifies partially and flows between the folded walls to seal them together.

V, 8. Applications: nontextile uses of fabrics

V, 8c. Laminates

PLASTICS. Impact strength of plastic materials at various temperatures. D. A. Shinn, U. S. Army. *U. S. Air Corps Tech. Rept. 5012* (August 9, 1945), in *Modern Plastics 22,* No. 11, 47-54, 60-61 (July 1945). Izod and Charpy impact strengths were measured for 38 thermoplastic and thermosetting plastics and laminates containing plastics (including fine fabric-phenolic laminate, coarse fabric-phenolic laminate, glass-cotton cloth-phenolic laminate, duck-allyl laminate, muslin-allyl laminate, glass cloth-allyl laminate, and cotton cloth-urea laminate) at -67, -40, +77, 122, and 158°F. Additional data were obtained for purposes of comparison on notched and unnotched specimens, on edge- and flat-wise impacts, and on the effects of moisture; and the tensile and flexural strengths of all the materials tested were determined. Impregnated woods and "glass-cotton-cloth" laminates possess the best combination of properties for use in the manufacture of airplanes. All data are tabulated, graphed, and discussed; and the types of fracture given by 24 specimens are photographed.

COMPOUND FABRIC. Compound fabrics and process for producing the same. Hans Meyer. USP 2 380 775, July 31, 1945. A process for making a compound fabric comprises forming a coating of a water-insoluble but water-absorbent inorganic gel, preferrably silicic acid, upon the fibers of a fibrous sheet material by first treating the material with a water-soluble inorganic salt and then converting the salt into the gel; treating the fibrous sheet material with a solution of chlorinated natural or synthetic rubber; causing the material so treated to adhere to at least one layer of fabric by application of heat and pressure. The chlorinated rubber softens above 100°C., but below the temperature at which fabrics would be damaged. The compound fabric so prepared is claimed also.

RESIN MANUFACTURE. Synthetic resin article manufacture. Arthur M. Howald & Leonard S. Meyer (to Plaskon Co., Inc., assignor to Libbey-Owens-Ford Glass Co.) Can. P. 428 844, July 17, 1945. Laminated articles are molded from wet strips of fabric, on which urea formaldehyde resins have been formed *in situ,* by stretching superposed layers of the wet fabric tightly over a support of the desired shape; converting the resin—the shrinkage of the wet fabric during drying supplies the pressure; and removing the support. The fabric, initially dry and impregnated with either a urea formaldehyde reaction product or a hardening agent, is wet with either a hardening agent or a urea formaldehyde reaction product, respectively.

PRINTER'S BLANKET. Paul Kunz (to Feldmühle A. G. Rosechach). Can. P. 429 149, July 31, 1945. A printer's blanket comprises a base made of layers of paper and rubber cloth on which there is at least one resilient top sheet in the form of a foil. The foil may be made of regenerated cellulose.

VI. FINISHING

DYEING AND FINISHING. Symposium,

Mid-West Section, American Association of Textile Chemists and Colorists, May 5, 1945. *Am. Dyestuff Reptr. 34,* P239-41 (June 4, 1945). Papers by: E. Seigrist, Holeproof Hosiery Co., Shrinkage control in wool hosiery; Herman Boxser, Western Felt Works, Shrinkage control with urea and melamine formaldehyde resins; George B. Chabot, Dyeing of nylon with acid dyes; A. Roy, Mercerizing cotton yarn in skeins; Carl Bick, Dyeing of acetate hosiery without pre-boarding, and Dyeing of acetate hosiery after conversion of the acetate. The digest of this last paper states that conversion is best done with solutions of such salts as trisodium phosphate or sodium sulfate at temperatures between 110 and 212°F.; that conversion reduces the diameter and length of the fiber; that converted hose is stronger than hose of the same denier woven directly from yarn; and that the process has been used very little because of O. P. A. ceiling prices. Data are given on shrinkage incurred during treatment of 75 denier acetate hosiery to 55 denier and on the average bursting strength before and after, compared with normal 55 denier hosiery. Enlarged photographs show the hosiery before and after conversion.

VISCOSE KNITWEAR. Factors which influence the colour and finish of viscose rayon knitwear. Midlander. *Silk J. & Rayon World 21,* No. 252, 33 (May 1945), through *Am. Dyestuff Reptr. 34,* 335 (August 13, 1945). Viscose-rayon knitted goods must be freed from oil stains and mended before dyeing, should be scoured a short time with a hot bath containing a high concentration of soap, should be rinsed in soft water if soap has been used for scouring, and should be bleached if it is yellow after scouring. If the bleached fabric is to be dyed, it usually does not need antichlor treatment, but it does need light soaping or treatment with sodium bisulfite, if it is not to be dyed.

WOOL MIXTURES. Processing wool fabrics with rayon and cotton. Anon. *Am. Wool Cotton Reptr. 59,* No. 34, 9 (August 23, 1945). The weight of the finished cloth, the felt required and the design of the mixture has to be studied by the finisher of wool-cotton or wool-rayon mixtures in order to determine the fulling and finishing required. The rôles of soap and napper are considered briefly, and the alteration of the cover by proper choice of weave is mentioned.

NYLON-TREATED FABRIC. Nylon-treated cotton, wool, etc. R. P. Foulds, W. H. Roscoe, & W. H. Watson (to Tootal Broadhurst Lee Co., Ltd.). Brit. P. 567 043. Fabrics or fibers are treated with a solution of nylon in strong acid and the nylon is precipitated on the material by an aqueous medium. The filled fabric may be rendered crease-resistant by resinous condensation products, after-treated with swelling agents; and nylon-treated wool resists shrinking and felting after milling. The treatment may be applied to cotton, wool, and other fibers.

ACETATE CREPES. Reduction of exposure marks in acetate crepes. British Celanese, Ltd. Brit. P. 567 310. Crepe effects are developed on fabrics containing highly twisted threads of cellulose esters of organic acids or cellulose ethers, of which at least the last part of the twist has been inserted while the threads are under the influence of a hot aqueous medium, by giving the fabrics a boiling-off treatment in a hot bath containing a small proportion of a lower aliphatic acid. Little or no sign of exposure marks is evident even though the fabric is stored a substantial time after weaving before the treatment. Formic acid, propionic acid, and butyric acid may be employed in concentrations of 1% to 5% by volume. Details are given in a specific example in *Textile Mfr. 71,* 356 (August 1945).

KNITTED COTTON FABRICS AND MARQUISETTS. Bulletin of the Aridye Corp., Fair Lawn, N. J., n. d.; 6 pp.; gratis. Brief instructions are given for pigment coloring with lightfast colors, giving a permanent finish, and imparting weather-resistance all in one operation.

VI, 1. Preparation

VI, 1a. Boiling and scouring

NOPCO 2211—KIER ASSISTANT FOR BOILING OUT COTTON GOODS. Bulletin of the National Oil Products Co., Harrison, N. J., 1944; 3 pp.; gratis.

VI, 1d. Drying and conditioning

DIELECTRIC HEATING. A survey of dielectric heating. M. J. Maiers, Commonwealth Edison Co. *Elec. Eng. 64,* 210-11 (June 1945). Dielectric heating has been applied to, among other things, production of laminates, drying of hygroscopic materials, and impregnation of textiles and papers with resins. Dielectric heating units are made by 10 national manufacturers in self-contained units varying in size from 1 to 75 kw., and in assemblies up to 300 kw. Although the initial cost is high ($1500 for the one-kilowatt unit and $200 per kilowatt for the 300-kw. unit, without accessories), their efficiency, compactness, controlability, and ease of operation make them economical.

DIELECTRIC HEATING. The role of frequency in industrial dielectric heating. G. W. Scott, Armstrong Cork Co. *Elec. Eng. 64,* T558-62 (August 1945). An analysis of the effects of frequency of dielectric-heating installations on load capacitance, standing waves, stray capacitance, etc., concludes that the choice of a frequency is dictated by the geometry of the load, the electrical characteristics of the material to be heated, and the oscillator tubes available; and that, although the highest practical frequency available should be economical in theory, often extraneous circumstances set a practical lower limit on heating time, too rapid heating may deteriorate the material, and the increased production rate may not be economical unless accompanied by an increased volume of production. For at least several years to come frequencies in the range of 10 to 30 mega-cycles only will be used in large-scale dielectric heating units, *i. e.,* up to 100 kw.

DRYING TEXTILES. A few applications of infrared radiations in the textile industry. C. A. French, Industrial Heat Engineering Co. *Am. Dyestuff Reptr. 34,* P252 (June 18, 1945). Infrared burners and lamps are being used to dry cloths and warps; to cure resin finishes, pigment dyes, Zelan, etc.; and to remove inflammable solvents. Both burners and lamps are more rapid and effective than ordinary drying ovens, but the lamps are 5 to 15 times as expensive to run as burners, except where the radiation is applied in the open.

DRYING FABRICS. Electrically controlled drying of travelling fabrics. K. S. Laurie (to J. Dalglish & Sons). Brit. P. 567 259. Apparatus for controlling the moisture content of travelling fabric comprises an electric circuit completed by contact with a representative stretch of the fabric. A controller controls the drying and is operated by another circuit; a relay consisting of switches operable by the energizing or de-energizing of electromagnetic means, closes or opens the other circuit. The primary winding of a step-up transformer is connectible to a pulsating electric current and the secondary winding imposes across the stretch a high voltage to produce in the control circuit a current strong enough in wattage to energize the electromagnetic switch-operating means.

VI, 6. Sizing and finishing

RAISED CLOTHS. Finishes for raised cloths. Use of softeners based on sulphonated fatty alcohols. Anon. *Dyer & Textile Printer 93,* 476 (June 8, 1945). Light woven or knitted fabrics, flannelettes, velvets, and other fabrics that are raised can be finished with the assistance of sulfonated higher fatty alcohols in addition to or instead of the customary soaps, starch, dextrine, and sulfonated oil. The sulfonated alcohols are supplied as waxes that are emulsified in water before use. These alcohols reduce slippage of threads, impart mildew-resistance, and remain as a semipermanent finish. While their initial cost is high, they are inexpensive because a little goes a long way.

RAYON FINISHING. Titanium compounds: their uses and disadvantages in the finishing of rayon fabrics. Anon. *Silk & Rayon 19,* 645, 676 (June 1945). A review citing five patent and literature references on the methods of incorporating titanium compounds into rayon yarns and fabrics to delustre them states that titanium dioxide can cause loss of durability. However, titanium dioxide is the chief titanium pigment used for delustering. It can be printed on or incorporated during dyeing. Other titanium salts can be substituted for antimony salts for the formation of double tennates in the fixation of basic dyes.

MODIFIED STARCH. Preparation of modified starch product. Ralph W. Kerr (to Corn Products Refining Co.). USP 2 380 848, July 31, 1945. Modified residue starch is made by saccharifying about 10-20% of the starch contained in a raw starch

milk by means of a diastatic enzyme at a temperature lower than the gelatinization temperature of starch, separating the saccharified portion of the starch and the remainder, and further modifying the latter by conversion with a starch liquifying enzyme.

CELLULOSE PROCESSING. William Edward Hanford & Donald Fletcher Holmes (to Canadian Industries, Ltd.). Can. P. 429 136, July 31, 1945. Cellulose derivatives are prepared by heating a cellulosic material with an organic compound having more than one -N=C=X group, where X is a chalcogen of atomic weight not greater than 33. Thus, crimped viscose yarn is impregnated with a solution in an inert solvent of an organic diisocyanate having a bivalent hydrocarbon radical of six carbon atoms between the two isocyanate groups, and the impregnated material is baked.

EFFECT OF RESIN TREATMENTS ON SPUN VISCOSE RAYON DYED WITH CALCOMINE AND CALCODUR COLORS. Calco Tech. Bull. 775 of the American Cyanamid Co., Bround Brook, N. J., June 1945; 4 pp.; gratis. The effects of washing and perspiration, exposure to ultraviolet light, and crocking were determined before and after treatment of variously dyed cloths with Aerotex N-3 alone and with Aerotex 301, and with Aerotex Cream 450.

VII. COLOR

VII, 2. Dyeing

DEVELOPMENTS IN DYEING. Advances made in the art of dyeing textiles. Anon. *Am. Wool Cotton Reptr. 59,* No. 29, 12-13 (July 19, 1945). A tremendous number of dyes are being made now; modern dyeing machinery conserves manpower and is less hard on the fabrics being dyed; and methods of dyeing mixed fibers containing various synthetic fibers have been developed. These points are discussed at some length, but without specific examples.

DYEING. Dyers and the study of dyeing. George Broun. *Southern Knitter 9,* No. 7, 30, 56-7 (July 1945). Dyeing is such a complicated art, only a technically trained person can hope to become a competent dyer; but technical training must be supplemented with experience gained from working with dye house operatives, with knowledge gained from reading technical literature and maintaining membership in technical associations, and with testing new dyes in the laboratory. Equipment for a small dye laboratory is discussed.

PACKAGE DYEING. Package dyeing of filament yarns. Technical Editor. *Rayon Textile Monthly 26,* 352 (July 1945). Harold F. C. Wilcox, Atlantic Rayon Corp., supplied figures on the capacity of his company for package dyeing viscose and acetate rayons (2,000,000 lb. per year), and stated the advantages of this sort of dyeing over skein dyeing.

DYEING. Cyril M. Croft & Walter H. Hindle (to Celanese Corp. of America). USP 2 380 503,

July 31, 1945. Textiles are dyed by: impregnating mechanically a textile made of or containing an organic derivative of cellulose with a solution of an organic derivative of a dyestuff for cellulose in an aqueous solution of a lower aliphatic ketone present in sufficient concentration to swell the textile; rapidly drying the impregnated material at an elevated temperature; and topping to the desired shade by subjecting the material to the action of the same dye in an aqueous dyebath without swelling action on the material.

YARN PACKAGE DYEING. H. W. Butterworth & Sons Co. Brit. P. 567 342. A pressure-dyeing keir comprises a tank with an internal header supporting yarn packages. An expansion tank open to the atmosphere contains dyestuff or washing liquid, etc. A pump has its suction communicating with an outlet of a fourway valve in a conduit open to the tank. The discharge of the pump leads to the supply port of the four-way valve, and the valve has outlet ports which communicate with the keir outside, and the interior of the header. A rotary valve body has a port which places the supply port of the four-way valve in communication with either of the outlet ports, at the same time placing by means of a bypass the other of these ports in communication with the outlet port of the valve. In the conduit from the four-way valve to the expansion tank there is an adjustable metering valve which determines the flow of liquid from the pump through the keir. Variation in flow through the yarn may be eliminated and more uniform dyeing is obtained.

VII, 2a. Direct

DYEING CELLULOSE. The dyeing of cellulose with direct dyes. I. A review of the literature. H. Alan Standing, The British Cotton Industry Research Association. *Trans. Faraday Soc. 41,* 410-34 (July 1945). A review of 119 references covers the purification of direct dyes for cellulose; the properties of aqueous solutions of these direct dyes; the factors affecting the equilibrium absorption of direct dyes by cellulose, *i. e.,* dye concentration, temperature, inorganic electrolytes, the form of the cellulose, and desorption; theories of equilibrium dyeing and substantivity; the kinetics of the dyeing process and the factors affecting them; and present views on the diffusion theory—"[a]lthough there is strong evidence that the dye diffuses into the swollen cellulose phase, little is yet definitely established concerning the relative effects of adsorption, the particle size of the dye micelles and of the interionic forces on the kinetics of dyeing". Numerous graphs illustrate the points made.

VII, 2d. Printing

SCREEN PRINTING. Mechanical aspects of screen printing. A. Laszlo. *Textile Mfr. 71,* 300-02 (July 1945), 345-8 (August 1945). A short description of the steps involved in screen printing of fabrics is followed by a critical description of the following automatic methods: the Wheelwright conveyor method; the Tillett un-winding and re-winding method; the Sochor-Laszlo method of functional carriages for pasting-on, printing, drying, and washing; and possible combination methods. It is suggested that frames of extruded steel or light metal, tables built up from standard sections, and high-speed dryers interposed between stationary mechanised screens of varying colors be adopted. New possibilities of combining with stainless steel foils and of improving sample printing through time and motion studies are discussed too.

PRINTING. Fast prints with acids. Society of Chemical Industry in Basle. Brit. P. 566 977. Fast prints are produced on fabrics by printing with a color containing in addition to the usual water-soluble dye, an acid or compound which liberates acid on steaming, such as thiourea or a mixture of thiourea and urea, to serve as a catalyst. Steaming is done in the presence of formaldehyde, preferably in the vapor form.

PRINTING TEXTILES. Photo-mechanical textile printing. Herberlein & Co. A. G. Brit. P. 567 126. Production of an intaglio roller for making photo-mechanical half-tone copies in textile printing, in which the lands on the roller for supporting the doctor are of dot formation, involves photographing the original with a camera having between the lens and the film a screen with transparent dots so that the copy has areas of unequal size but of equal tonal depth; developing the film; printing from the negative a diapositive that is chemically reduced to make the white dots in the shadows more apparent, and so to yield more wear-resistant land dots on the roller; printing the corrected disapositive onto a roller having a light-sensitive layer which can be rendered water-insoluble by exposure; developing the layer with water; and etching the roller to produce an intaglio printing surface.

VII, 3. Defects and dye failure; causes and prevention

GAS FADING. Notes on gas fading of acetate fabrics. Anon. *Rayon Textile Monthly 26,* 350-1 (July 1945). Acetate rayons, especially those dyed with certain blue dyes, are very susceptible to gas fading, which is known to be caused by the reaction of the dye with oxides of nitrogen. A method of restoring gas faded garments consists in heating them in a bath containing 0.5 oz. ammonia, 1 oz. synthetic wetting agent, and 1 oz. butyl cellosolve for each 10 gal. water, and then adding 1-2% on the weight of the fabric of Glauber salt to re-set the dye. A recent United States patent (the number is not given) to Celanese Corporation of America for avoiding gas fading by giving the textile to be dyed a preliminary treatment with caustic alkali is abstracted at some length.

VII, 4. Pigment coloring

*PIGMENT-DYEING WITH CAMOUFLAGE COLORS. Bulletin of the Aridye Corp., Fair Lawn, N. J., n. d.; 6 pp.; gratis.

VIII. PROOFING

NETTINGS. Some aspects in the finishing of cotton marquisette nettings with cellulose derivatives. Joseph E. Goodavage, U. S. Army, Quartermaster Corp. *Am. Dyestuff Reptr. 34,* P232-3, P240 (June 4, 1945). Cotton marquisette weighing 1.8 oz. per sq. yd. with 50-52 warp and 50-52 filling threads per in. was supplied to the U. S. Army for headnets and field bars. The netting was impregnated and coated with fungicides, dyed, made water-repellent, and treated with something to prevent slippage of the threads. Since 1942 this has been done by treating cloth already impregnated with a soluble fungicide with an alkaline solution of a cellulose derivative containing pigment and fungicide; coagulating the cellulose derivative on the surface of the cloth by means of dilute sulfuric acid; tenter drying; and treating with a water-repellent. Tests for finish, fastness to water, water-repellency, loss of weight on leaching, and resistance to mildew are described briefly. There is one diagram of the treating process.

PROCESSING TEXTILES. Paper and textile processing. Ernest Bader. Can. P. 428 617, July 10, 1945. Fibrous material is treated with a solution or emulsion of rubber-like material obtained by the action of sulfur chloride on oils, and then is dried.

VIII, 1. Waterproofing; weatherproofing; moistureproofing

COATING FABRICS. Fabric coating method. Wade Virgil Ridge (to Dominion Rubber Co., Ltd.). Can. P. 428 682, July 10, 1945. An impervious coating which fills the interstices of fabric without penetrating into the interior of the threads is formed by wetting the cloth with alcohol or water, applying to the wet fabric a solution of thermoplastic resin that is precipitated by alcohol or water on the surface of the threads, and solidifying the resin.

COATING FABRICS. Fabric coating process. William Whitehead (to Camille Dreyfus). Can. P. 428 890, July 17, 1945. Fabric made from regenerated cellulose yarns and containing a plasticizer for the coating composition are coated with what is essentially a film-forming derivative of cellulose. The plasticizer may be ethylene glycol dimethyl ether, dimethylphthalate, ethylphthalylethylglycollate, triethylene glycol, triacetin, tripropionin, mono-ethyltoluene sulfonamide, triphenylphosphate, tricresylphosphate, diethylphthalate, dimethoxyethylphthalate, dibutyltartrate, camphor, or dibutylphthalate. The coating adheres strongly and shrinks the cloth as it dries.

VIII, 2. Insectproofing

MOTHPROOFING. The war against moths won by Eulan CN. H. Luttringhaus, General Dyestuff Corp. *Rayon Textile Monthly 26,* 349-50 (July 1945). Woollens can be mothproofed for life by treatment with 2% by weight of Eulan CN (pentachlorodihydroxytriphenylmethane sulfonic acid) at the time of dyeing. The Eulan CN is dissolved in boiling water and added to the dyebath, which consists of either neutral, or preferably, acid dye not above 160°F. The agent is: nonvolatile; not removed by repeated washings and dry-cleanings, nor abrasion; not affected by light or climate; odorless and colorless; without effect on the softness of the material; unaffected by perspiration; and non-toxic to human beings. Eulan CN also kills carpet beetles. It is recommended especially for treating blankets.

MOTHPROOFING WOOL. Wool mothproofing process. Andrew McLean & David Traill (to Canadian Industries, Ltd.). Can. P. 428 973, July 24, 1945. Wool is mothproofed by treating it after scouring in an acidified aqueous solution of formaldehyde having a pH not exceeding 1.0 at 20°C. A dissolved soluble salt may be used in the formaldehyde solution also; and the cloth may be washed after treatment until it is substantially free of acid, and the pH adjusted by soaking it in a solution of a weak alkali. A somewhat similar process for *mothproofing furs* (Can. P. 428 971, Traill & McLean) requires the immersion for more than seven hours of the furs in a saline solution of formaldehyde that has been acidified to a pH not greater than 2.5, and that contains sufficient salt to prevent swelling of the skins.

VIII, 3. Proofing against microbiological attack

ROT-PROOFING FABRICS. Does copper naphthenate oxidize cellulose? A. E. Bartlett & Milton Goll, Nuodex Products Co., Inc. *Am. Dyestuff Reptr. 34,* 225-7 (June 4, 1945). Copper naphthenate in pure form, mixed with linseed oil, mixed with other inhibitors, or in cordage-type preparations does not catalyze the oxidation of cellulose (cotton duck, cotton twine for fishnets, and jute), on which it has been placed as a rot-proofing agent, in the presence of oxygen at 115°C., in ultra-violet light in a Fade-o-Meter, nor out-of-doors during 4.5 months in a temperate climate. Copper naphthenate is non-injurious to nets and cordage for salt-water service. Copper sulfate, however, does seem to catalyze the oxidation of cellulose.

VIII, 4. Flameproofing

FLAMMABILITY OF TEXTILES. Sub-Committee of the American Association of Textile Chemists and Colorists on Flammability of Consumer Textiles. *Am. Dyestuff Reptr. 34,* P239-40 (June 4, 1945). The Sub-Committee offered recommendations to retailers until a National law shall be passed. Brushed rayons should not be used in wearing apparel unless they have been treated with a fire-retardent chemical, are so labeled, and the label states that the treatment must be renewed after washing or dry cleaning. Pyroxylene-coated materials or films must not be used for clothing. Toys made of either brushed rayon or pyroxylene-coated materials must be labeled "inflammable". Any textile is considered hazardous if it ignites with a standard flame in one second and flashes over the surface of a sample measuring 1.5 inches by 6 inches, when held at an angle of 45°, in 5 seconds.

VIII, 6. Shrinkproofing

SHRINKPROOFING. A review of shrinkage control. Irving Teplitz, Governor Fabrics Corp. *Rayon Textile Monthly 26,* 355-6 (July 1945). Shrinkage, one of the most important problems of the textile manufacturer, is controlled in cottons by sanforizing; in wool by crabbing and by coating the scales to control felting, *e. g.,* with melamine formaldehyde resins; in rayons by permanent cellulose finishes, *e. g.,* Celfon and Kopan, or by resins, *e. g.,* melamine formaldehyde; and in thermoplastics, such as nylon, by moist or dry heat. Each of these methods is described briefly.

IX. TESTING AND ANALYSIS; SPECIFICATIONS

LABELING TEXTILES. The A. A. T. C. C. surveys the informative labeling of textiles. Henry F. Herrmann, General Dyestuff Corp. *Am. Dyestuff Reptr. 34,* P234-7 (June 4, 1945). A code of standardized identifying symbols is needed to avoid "trouble" between individuals and industries concerned with manufacturing and marketing textile products. Cooperation between the textile industry and dye manufacturers; dyers, printers, and finishers; garment manufacturers; and dry-cleaners and launderers must be obtained, acting possibly through the Government, to formulate appropriate code symbols which must be put on small labels sewn to garments. The label should show the nature of the fabric, and its fastness to light, washing, and chlorine bleaches.

TEXTILE TESTING. Tomorrow's Textiles—Yesterday's Test Methods. J. B. Goldberg, J. P. Stevens & Co., Inc. *Am. Soc. Testing Materials Bull. No. 135,* 47-8 (August 1945). "Before becoming too concerned with the potentialities of the textiles of tomorrow there is a definite need for improvement in the testing technique used today" so that both the existing and the new textiles can be evaluated properly. Simple, reliable tests that can be correlated with service records are needed to measure thermal insulation, water-repellency, air-permeability of fabrics other than parachute cloth, tear-resistance and puncture-resistance, breaking strength, abrasion-resistance, crease-resistance, fabric stability, and light and colorfastness.

IX, 1. Physical and Mechanical

ARC TIMER. An interval timer for arc duration. J. S. Quill, General Electric Co. *Elec. Eng. 64,* T237-40 (May 1945). "This paper describes a laboratory electronic instrument which was developed for . . . measuring in milliseconds the time during which arcing exists when an electric circuit is opened."

CLOTH CUTTER. Laboratory cutter for cloth strips. James H. Kettering & Albert S. Cooper, Southern Regional Research Laboratory, U. S. Department of Agriculture. *Am. Dyestuff Reptr. 34,* 249 (June 18, 1945). An illustrated description is given of a cutter for cutting 80 to 100 yards of cloth an hour into strips of desired width and winding the strips into rolls. The device consists of a number of household electric scissors mounted with ordinary laboratory clamps between suitable tension bars on a platform with a ⅛ hp. motor, a speed-reducer, and a wind-up beam. The motor powers the wind-up beam. The scissors are operated by a vibration mechanism powered by ordinary electric current.

TESTING TEXTILES. Meeting consumer needs in textiles. W. E. Coughlin, "Good Housekeeping". *Am. Dyestuff Reptr. 34,* P253-4, P256 (June 18, 1945). "Consumers" of textiles want accurate information on how articles made from them will wear. Although new tests will have to be devised to predict: fastness of dyes to gases, sunlight, washing, and perspiration; shrinkage in dry cleaning; etc., a great deal could be done if the textile industry availed itself of information furnished by existing tests. For example, clothes made from cloth that shrinks 5% on washing do not fit after laundering; and a dyer could choose a dye known to be relatively sunfast, if he knew the cloth he is dyeing were to be used in window-drapes.

IX, Ia. Fibers

ELECTRON MICROSCOPY. A bibliography of electron microscopy. III. Claire Marton, Stanford University, & Samuel Sass, University of Michigan (now with General Electric Co.). *J. Applied Phys. 16,* 373-8 (July 1945). A bibliography of 168 references includes a translation of two tables from an article by E. Ruska in *Kolloid Zeitschrift 107,* 2-16 (April 1944) summarizing the applications of the various types of electron microscopes and the number of papers about each type published in Germany up to the end of 1943.

FIBER ELASTICITY. A comparison of the tensile elasticity of some textile fibers. Reginald Meredith, The British Cotton Industry Research Association. *J. Textile Institute 36,* T147-64 (July 1945). The elasticity of five cottons, five bast fibers, seventeen rayons, four silks, two nylons, two Vinyons, three wools, one mohair, one camel hair, and one casein fiber was measured as the ratio of elastic to total extension, and plotted against stress in grams per denier and strain in percent. Both the experiments and their results are discussed at length, and compared with those made by others as reported in fifteen references.

GROWTH OF FILMS. The laws of expanding circles and spheres in relation to the lateral growth of surface films and the grain-size of metals. U. R. Evans, Cambridge University. *Trans. Faraday Soc. 41,* 365-74 (July 1945). Mathematical. "Many problems, including those concerning the lateral growth of surface films, and the grain-size reached in cast metal, require a knowledge of the geometry of expanding circles or spheres. A

simple method, based on the Additivity of Expectation, is described."

PENETRON. Penetron. Engineering Laboratories, Inc. *Rev. Sci. Instruments 16,* 226-7 (August 1945). The Penetron, which measures the thickness of any sort of material by the use of penetrating gamma-rays from radium, and which can be used to determine liquid levels, densities, and interfaces, is described briefly. The instrument was developed under the direction of Gerhard Herzog of the Texaco Development Co.

RUGOSIMETER. The rugosimeter. An instrument for measuring surface roughness of calendered sheet rubber. Melvin Mooney, United States Rubber Co. *Ind. Eng. Chem. Anal. Ed. 17,* 514-8 (August 1945). A new instrument designed for measuring the surface roughness of calendered raw rubber sheet or similar materials measures the resistance to air flow between the rough surface and a plane test surface resting on it. It consists essentially of a constant-pressure air valve, a large needle valve with a calibrated scale, a manometer, and an annular test plate resting on the surface under test. The needle valve is opened to the point at which the pressure on the manometer is half the pressure maintained by the constant-pressure valve. The resistance of the needle valve to the air flow is then equal to and measures the resistance of the test plate on the sample. By a theoretical formula this air-flow resistance is converted to "rugosity height", which is the height of the hills above the valleys in an idealized rough surface of sinusoidal profile. The apparatus is illustrated.

SOFTENING POINTS. Ring and ball softening points of resins. A constant-temperature air-bath method. Victor E. Grotilisch & Harold N. Burstein, U. S. Dept. Agric. *Ind. Eng. Chem. Anal. Ed. 17,* 476-80 (August 1945). Following a discussion of the theory underlying the determination of the ring and ball softening point, a new method is described. This new method is more rapid than the A. S. T. M. E28-42T method; employs simple equipment, chiefly the standard equipment of the A. S. T. M. test; is reproducible within 1.0°C.; and is applicable over a wide temperature range. It consists in heating the sample in an air bath immersed in a bath of a liquid held at constant temperature. Diagrams show the construction of the apparatus and typical time-temperature curves obtained on several resins.

STATISTICAL METHODS. Statistical methods in quality control. II. Two kinds of measurement—variables and attributes. Am. Institute of Elec. Engineers Sub.-Comm. on Educational Activities. *Elec. Eng. 64,* 249-50 (July 1945). "The difference between measurement by variables and measurement by attributes and the use of the arithmetic mean and standard deviation in solving engineering problems are discussed . . ."

STATISTICAL METHODS. Statistical methods in quality control. III. Frequency distribution for setup check of process. Am. Institute of Elec. Engineers Sub-Comm. on Educational Activities. *Elec. Eng. 64,* 299 (August 1945). The "quickest method for checking parts within desired quality range, the various operations of the inspector, and the purpose of the obtainable data are discussed . . ."

STATISTICAL METHODS. Statistical tools for controlling quality. Joseph Manuele & Casper Goffman, Westinghouse Electric and Manufacturing Co. *Elec. Eng. 64,* T524-8 (July 1945). Methods of obtaining frequency distribution, of making and using quality-control charts, and of analyzing variance are explained with the help of typical curves, charts, and tables based on the measurements of a machine part.

STATISTICAL METHODS. Statistical methods applied to insulator development and manufacture. J. J. Taylor, Ohio Brass Co. *Elec. Eng. 64,* T495-9 (July 1945). "The science of statistics is highly developed and applicable to a variety of engineering subjects. There remains the task of getting statistical methods out of books and into general use." These methods are illustrated by examples taken from the manufacture of high-voltage-insulators.

TENSIOMETER. Mark Hattan. USP 2 380 433, July 31, 1945. Tension in cable-like members is measured by a tensiometer comprising a combination of a clamp to be clamped to the length of a cable, having a deflection scale associated with it and a movable member to engage the cable; and a torque-indicating wrench to exert a bending moment on the cable through moving the clamp bodily to deflect the cable. The deflection is registered on the scale and is measurable by comparison of the indicated torque producing the bending moment and the deflection registered on the scale.

IX, 1b. Yarns

DEVIOMETER. The deviometer—an irregularity tester. R. W. Vose & C. H. Plummer, Chicopee Manufacturing Corp. *J. Textile Institute 36,* T177-84 (July 1945). A deviometer for use with a Saco-Lowell sliver tester calculates mechanically and automatically the variations in diameter of slivers, rovings, and yarns. The instrument is described, photographed, and diagrammed, and the modifications made in the sliver tester to make it faster and more flexible are discussed. Among the first applications of the new deviometer were the determination of the shortest length of sample which could be used reliably in routine work—about 400 meters for card sliver and 100 for drawing sliver— and the optimum roll spacing in a special two-roll laboratory draw frame. The data are graphed.

ABRASION TESTS. A study of lining fabric abrasion. W. J. Hamburger & H. N. Lee, Fabric Research Laboratories, Inc. *Rayon Textile Monthly 26,* 341-4 (July 1945); 385-8 (August 1945). Viscose and acetate rayon linings of comparable construction were tested to failure on the Taber "Abraser", and the percentage loss in tensile strength was plotted as a function of the number of cycles. Comparable tests on the unwoven yarns, counts of the number of broken threads in the abraded fabrics, and studies of cross-sections of the abraded yarns and fabrics in the microscope revealed the probable causes of the following facts: slightly worn viscose is stronger than acetate, but the reverse is true for severer wear; the geometry of the fabric contributes to the rates of destruction of both; and the durability coefficient is proportional to the coefficient of the energy of abrasion. Graphs and camera-lucida drawings illustrate the various points made.

COLORFASTNESS. The importance of standard test methods, ratings, and terminology for color fastness. Herbert A. Ehrman, National Bureau of Standards. *Am. Dyestuff Reptr. 34,* P255-6 (June 18, 1945). The methods described in "Textiles—Testing and Reporting, Commercial Standards CS59-44" and others like them for testing textiles should be supplemented by systems of rating to coordinate and evaluate the results of the tests. The ratings should be applied uniformly regardless of the type of fiber, weave, pattern, or dyestuff. They should be interpreted to the user of the fabric by a single system of terminology that should denote classes of colorfastness rather than over-all cloth grades—representatives of industry and the Bureau of Standards have recommended the terms excellent, very good, good, moderate, fair, and poor.

INSULATING MATERIALS. Electrolytic corrosion—methods of evaluating insulating materials used in tropical service. B. H. Thompson & K. N. Mathes, General Electric Co. *Elec. Eng. 64,* T295-9 (June 1945). The results of several types of tests for evaluating different electric insulating materials under tropical conditions are described. A description is given of a refrigerator box used to obtain a humidity of 100% plus dew at 35°C. A table shows the monthly mean humidities for each hour of the day at Rangoon, India. Cellulose acetate and polystyrene foils, which are water-resistant, proved much better protection for copper wire than cloth, paper, and cellophane, which are wet by water.

LIGHT FASTNESS. The standard fading lamp at the National Bureau of Standards and means of calibrating other lamps in terms of it. Herbert F. Launer, National Bureau of Standards. Extracts of speech in *Am. Dyestuff Reptr. 34,* P264 (July 2, 1945). Commercial arc lamps for testing the fading of textiles vary so greatly from each other and with themselves over a period of time in their ability to fade Victoria Blue B on a cotton rag paper (*Letter Circular 785*) that the Bureau of Standards built a standard lamp and provided a 10 years' supply of uniform carbon electrodes for it. Purified sulfite paper dyed with Benzoazurine G (Color Index 502), which responds to changes in relative humidity and type and make of arc lamp in the same manner as most textiles, is available from the Bureau, as well as a strip exposed in the Standard Arc for 16, 18, 20 and 22 "Standard Fading Hours".

LIGHT FASTNESS. A proposed method for the calibration of carbon arc lamps used for testing and grading light fastness. C. A. Seibert, E. I. du Pont de Nemours & Co., Inc. *Am. Dyestuff Reptr. 34,* P272-80 (July 2, 1945). Preliminary work on the method proposed in *Am. Dyestuff Reptr. 31,* 595 (1942) for calibrating carbon-arc lamps for testing light fastness of dyed textiles is reported. This method consists in placing a control (a piece of colored paper or cotton dyed grey is the best so far) under the lamp for 20 hours and comparing its color with that of a set of standards representing the control after exposure in a theoretical standard lamp for periods of 12, 14, 16, 18, 20, 22, 24, 26, and 28 hours. The average fading rates of 67 lamps and the behavior on fading of various proposed controls are reported in tables and graphs. It is suggested that the amount of fading be expressed as the percentage of color change measured photometrically at the point of least reflectance calculated from the conversion tables for the K/S formula (where K is the absorption coefficient and S the scattering coefficient). E. R. Laughlin, *Ibid.,* P280, supports this suggestion.

WATER EVAPORATION. Some experiments on the evaporation of water from a plane surface. W. H. Rees, The British Cotton Industry Research Association. *J. Textile Institute 36,* T165-8 (July 1945). A simple apparatus, which is described and illustrated, was developed for measuring the rate of evaporation of water or artificial perspiration from cloth held on a porous plate in contact with the surface of the liquid. Results obtained on three lenoweave and two plain-weave cotton cloths, scoured or treated with water-repellent, are tabulated. The fabrics treated with water-repellent so greatly retarded evaporation under normal conditions that they are not recommended for next-to-the-skin garments nor for outer garments to be used under conditions where the body perspires profusely, although when they are fully saturated they do not retard evaporation.

WATER-VAPOR PERMEABILITY. Measurement of the water vapour permeability of textile fabrics. F. T. Peirce, W. H. Rees, & L. W. Ogden. The British Cotton Industry Research Association. *J. Textile Institute 36,* T169-76 (July

1945). Measurements of the permeability to water vapor of 34 plain and treated fabrics developed for use in the Services (wools, velour, gaberdine, poplin, cambric, cotton duck, nylon parachute fabric, etc.) were made in simple equipment that is described with the aid of a diagram; and are reported as resistance to the flow of water vapor, r, which equals $(100 - E)\ [(1/F_m) - (1/F_b)]$, where E is the relative humidity of the surrounding air, and F_m and F_b are the measured rates of transmission of water vapor without and with the fabric, respectively. It is possible to make fabrics with high resistance to liquid water and air with almost "normal" resistance to water vapor.

WEATHERING TESTS. Some variables in weathering tests of textile fabrics. Stanley Backer & Ralph Harwood, U. S. Army Quartermaster Corp. *Am. Dyestuff Reptr. 34,* P265-71 (July 2, 1945). Fading of olive drab serge depends on the amount of sunlight to which it is exposed, the relative humidity, and the amount of dirt it takes up. These facts were learned by analyzing data obtained by exposing samples from 10 Army contractors to the weather in 19 locations in the U. S. during the Summer of 1943, and measuring the fading before and after weathering with the Hunter Multipurpose Reflectometer at the end of successive 10, 20, and 30-day periods; by determining the effects of dirt on fading and the effect of the smoothness of the fabric on the amount of dirt retained; and by correlating these data with the data obtained from several Fade-O-Meters and the standard carbon-arc lamp of the National Bureau of Standards. Twenty-four references, nine charts and four tables.

IX, 1d. Textile chemicals and dyes

VISCOSITY. A flow-curve recorder for a rotational viscometer. Ruth N. Weltmann, Interchemical Corp. *Rev. Sci. Instruments 16,* 184-91 (July 1945). A recorder, which draws complete flow curves, developed as an attachment for a Couette-type of viscometer for use on thixotropic substances and materials of a non-Newtonian behavior, is described and illustrated, as are also the records obtained. A sparking electrode is moved by the bob deflection spring and graph paper is moved perpendicularly to the electrode motion by the transmission handle whose position controls the speed of the cup. Deflection of the bob is proportional to the shearing stress, and speed of the cup is proportional to the rate of shear. The average deviation between visual readings and the recorded curves does not exceed ±0.5%.

FOAM TESTER. Apparatus for testing the foaming characteristics of liquids. Herschel G. Smith (to Gulf Oil Corp.). USP 2 380 679, July 31, 1945. Apparatus for testing the foaming characteristics of liquids comprises in combination with a measuring receptacle a separate, removable dished base practically covering the bottom of the receptacle; an internal annular shoulder formed in the peripheral wall of the dished base; a discardable filter disk of thin, sheet material supported on the shoulder; a ring threaded into the holder for clamping the disk, and a pipe for gaseous fluids secured to the peripheral wall and communicating with a passageway leading to the enclosed space beneath the filter disk to keep the pipe from the center of the liquid in the measuring receptacle, in the path of rising bubbles from the filter disk, and so minimize the adherence of bubbles to it. The filter disk is of large diameter compared with the measuring receptacle, so that bubbles rising through the body of liquid under test are distributed quite homogeneously throughout.

IX, 2. Chemical

AMPLIFIER. Vacuum tube amplifier for measuring very small alternating voltages. L. C. Roess, The Texas Co. *Rev. Sci. Instruments 16,* 172-83 (July 1945). The design and construction of a low frequency vacuum tube amplifier intended to measure the alternating output of a rapid-response thermocouple in an infra-red spectrograph, is described with the aid of circuit diagrams and typical records.

THERMOCOUPLES. The design and construction of rapid-response thermocouples for use as radiation detectors in infra-red spectrographs. L. C. Roess & E. N. Dacus, The Texas Co. *Rev. Sci. Instruments 16,* 164-72 (July 1945). A description is given of the design and construction of a rapid-response, sensitive vacuum thermocouple for use in an infra-red spectrograph. The hot junction is made by condensing bismuth and antimony in layers 600-1000 A thick, so as to overlap slightly, on a Formvar film 400-500 A thick; stretching the film over a glass form having an opening under the hot junction; and blackening the hot junction with gold evaporated in hydrogen at 2-4 mm. mercury. Diagrams and graphs illustrate the couple's design and show its performance.

WOOL ANALYSIS. Notes on the estimation of vegetable material in scoured wool. M. Lipson. *Am. Dyestuff Reptr. 34,* 250, 259 (June 18, 1945). The author defends his method for analyzing burrs and other vegetable impurities in scoured wool against the criticisms of Wollner, Tanner, and Michelson by showing that the weights lost from six impurities common in Australian wool by dissolving the wool in hot hydrogen peroxide and sodium bicarbonate are quite consistent, so that the analyses can be corrected for the losses; and by showing with photographs that Wollner, Turner, and Michelson's visual method (the wool is immersed in a liquid having the same index of refraction, *e. g., o*-dichlorobenzene) is not accurate where the impurities are in the range of 20-30% or where the wool is stained.

X-RAY MOUNTINGS. A method for x-ray

examination of systems containing varying amounts of a volatile component. Sullivan S. Marsden, Jr., Sanford University. *Rev. Sci. Instruments 16,* 192-3 (July 1945). A special technique is described for obtaining x-ray diagrams of samples containing liquid or liquid crystals, e. g., soap and water or crystalline hydrates. A capillary tube is partially filled with the dry solid; the tube is cleaned; liquid is introduced and frozen in the bottom of the capillary; the walls of the tube are cleaned; the capillary is evacuated, sealed, and attached to the pinhole with takiwax; and a Dewar flask is clamped around it.

IX, 2d. Textile chemicals and dyes

ANALYSIS OF DYES. Polyethylene oxide condensates, an aid in the spectrophotometry of dyestuffs. H. H. Taylor & F. T. Simon, Sidney Blumenthal & Co., Inc. *Am. Dyestuff Reptr. 34,* 319-21 (August 13, 1945). Addition of polyethylene oxide condensates to the solutions of dyes to be analyzed spectrophotometrically decreases the errors to which the analyses of dilute solutions of the dyes are subject—salt effects, variations in pH, aging, irradiation—although the mechanism of their action is not understood. Examples are given of their use in the spectrophotometry of ordinary water soluble dyes (Diamine Fast Red F), vat dyes, naphthols, and non-additive dye mixtures (Diamine Sky Blue FF and Chrysophenine C. I. No. 365). Five sets of spectrophotometric curves.

ANALYSIS OF OILS. The component acids of the testa and kernel fats of the oil palm. H. A. Carsten, T. P. Hilditch, and M. L. Meara, Liverpool University. *J. Soc. Chem. Indus. 64,* 207-9 (July 1945). "The fat in the thin brown testa of the palm kernel (*Eloesis guineensis*) contains more oleic and linoleic acids, and less lauric acid, than that of the endosperm; linoleic acid amounts to 5% or more, and oleic acid to 20-25%, of the total fatty acids (the corresponding proportions in the endosperm fat being about 1% and 11-12%)." The results of the various analyses are tabulated.

ANALYSIS OF OILS. The use of low-temperature crystallisation in the determination of component acids of liquid fats. I. Fats in which oleic and linoleic acids are major components. T. P. Hilditch and J. P. Riley, Liverpool University. *J. Soc. Chem. Indus. 64,* 204-7 (July 1945). Preliminary separation of mixed fatty acids by crystallization from solvents at low temperatures by the technique of J. B. Brown *et al.* is preferable to separation of the lead salts in the analysis liquid fats containing only small amounts of saturated fatty acids. Coupled with subsequent ester-fraction, this procedure is shown to be satisfactory for the analysis of the acids from sunflower seed, sesame, and peanut oils, all of which have oleic and linoleic acids as their major components.

SURFACE-ACTIVE AGENTS. Methods for

the estimation of high molecular quaternary ammonium compounds. Ardien S. Dubois, Onyx Oil & Chemical Co. *Am. Dyestuff Reptr. 34,* 245-6 (June 18, 1945). Various known methods for analyzing quaternary ammonium compounds in solution, and on wool, paper, or fabrics are summarized. A new method for analyzing such compounds in solution by measuring the amount of iodine they absorb, and another for analyzing them on undyed rayon, cotton, and wool by measuring the shade of the cloth produced by dyeing with them in a standard dye under controlled conditions are described. Nine references.

SURFACE-ACTIVE AGENTS. A method of determining organically combined sulfuric anhydride in surface-active products. Bertha DuBose & V. B. Holland, Cannon Mills Co. *Am. Dyestuff Reptr. 34,* 321-2 (August 13, 1945). All surface-active agents containing organically bound sulfuric anhydride can be analyzed by a wet-ashing method, which is described here, and which is more accurate for many types of compounds than the standard AATCC and ASTM dry ash-gravimetric method and more widely applicable than the acid-titration method. The sample is dissolved in a suitable solvent, freed of inorganic sulfates by extraction with sodium chloride solution, freed of solvent by evaporation, and wet-ashed with nitric acid and then nitric and perchloric acids. The sulfate formed is determined as barium sulfate by any method desired. Analyses of seven typical agents illustrate the reproducibility of the method and its accuracy compared with acid-titration.

X. WASTE RECOVERY AND UTILIZATION; WASTE PREVENTION

X, 3. Mill affluents and waste disposal; stream pollution

LIQUID PURIFICATION. Liquid purification apparatus. Robert F. Clemens (to The Dorr Co.). Can. P. 428 990, July 24, 1945. Apparatus for separating suspended particles from liquids comprises at the top a closed tank for gas at subatmospheric pressure; at the bottom an ever-changing body of liquid constantly exposed to the gas; a liquid-sealed upflow feed tube; means for discharging the clarified liquid, which include an upflow section leading from the lower portion of the tank, an overflow weir, and a liquid-sealed barometric leg for the passage of the liquid overflowing the weir; liquid-sealed discharge means for receiving floated scum from the body of liquid being treated; and a pump for sucking gas from the apparatus, which has a suction intake above the level of the overflowed effluent from the weir, but lower than the weir, to control both the gas pressure within the tank and the level of the overflowed liquid.

SEDIMENTATION APPARATUS. William Chambers Weber (to The Dorr Co.). Can. P. 429 147, July 31, 1945. A sedimentation tank com-

prises a tank bottom; a marginal wall; means for discharging sediment from the bottom; a stationary feed-receiving channel extending between the wall and the central portion of the tank, and having an influent portion at the wall; means for supplying liquid to the influent portion of the channel; immersed means for laterally distributing the liquid from the channel and submergedly delivering liquid into the tank; an effluent collection outflow channel approximately parallel to the feed channel; means to control the operative level of the liquid; and means for discharging effluent liquid from the outflow channel. In one claim the immersed feeding means is a row of vertical vanes on a vertical axis; in another the submerged influent distributing means is a row of fixed vertical baffles.

LIQUID CLARIFICATION. Precipitation and coagulation process and apparatus. Frank D. Prager (to Graver Tank & Mfg. Co., Inc.). Can. P. 429 157, July 31, 1945. In a process for treating liquid by the formation and removal of sludge the liquid is kept in a tank divided by two concentric partitions into three zones — a mixing zone, a clarification zone, and an outer channel —with a transfer zone in the upper part to bridge the clarification zone; reagents required for sludge formation and the influent liquid are fed into the inner mixing zone; circulating liquid flows from a lower part of the clarification zone, up through the mixing zone, out through the transfer zone into the outer channel, down through the outer channel, and then into the lower part of the clarification zone; and treated liquid is removed from the top, and sludge from the lower part, of the clarification zone.

LIQUID CLARIFICATION. Liquid treatment apparatus. Edward W. Welp (to Graver Tank & Mfg. Co., Inc.). Can. P. 429 158, July 31, 1945. In a liquid treating apparatus consisting of a shallow tank with a substantially flat bottom and vertical walls there are provided: concentric annular partitions to form an outermost downflow zone, and several inner upflow zones; means for supplying liquid to be clarified and any required reagents for precipitating sludge to the upper part of the downflow zone; means for withdrawing controlled amounts of treated liquid from an upper part of each of the upflow zones; a sludge scraper to collect sludge from the bottom; and means for withdrawing the sludge so collected.

XI. CLEANSING

MEDICAL USES OF SOAP. Morris Fishbein, editor, J. B. Lippincott Co., Philadelphia, 1945; 182 pp.; price $3.00. In a chapter by Carey P. McCord, M. D., the places where soaps are used in industry, the dermatitis that they can cause, and formulas for soaps for use by factory workers in cleansing their skin are discussed at some length.

XI, 1. Laundering

TUMBLER. John P. Jorgenson & Alfred G. Kling (to Kling Bros. Engineering Works). USP 2 380, 652, July 31, 1945. A tumbler comprises a supporting base, a cylinder having an imperforate periphery horizontally rotatable on the base and having a garment-receiving opening at one end concentric with the cylinder, a heater with air passageways through it, means for movably supporting the heater on the base for movement into and out of closing registration with the garment-receiving opening, an exhaust conduit communicating axially with the opposite end of the cylinder, means for rotating the cylinder on the axis of the heater and exhaust conduit while the latter remain stationary, and means for moving the air from the exterior through the heater and axially through the cylinder to the exhaust conduit when the heater is in registration with the garment-receiving opening.

WASHING MACHINE. George W. Dunham (to General Electric Co.). USP 2 380 732, July 31, 1945. In a washing machine of the type for washing, rinsing, and drying clothes, a tub, a rotatable clothes receptacle in and overflowing to the tub, means for pumping liquid from the tub to the receptacle, a liquid supply conduit having a nozzle discharging into the receptacle, a control movable to the liquid supplying and pumping positions, a timer for moving the control to the liquid supplying and pumping position, means for holding the control in the liquid supplying position, and means responsive to the liquid in the bottom of the tub for releasing the holding means, are claimed.

WASHING MACHINE. Fluid agency clothes washer with oscillating tub. William Rocke. USP 2 380 872, July 31, 1945. In a fluid-agency clothes washer, a tub is mounted for pivotal movement on a central vertical axis; the tub has above its bottom a horizontal perforated partition; a pump mounted below the partition has an annular discharge orifice immediately above it, is concentric with the axis, and discharges radially, to create cyclic, toroidal, rolling water-currents to carry "in washing action" the clothes in contact with the partition and the tub; and means are provided for oscillating the tub, independently of the pump, about its axis during the washing action to interrupt the flow of the clothes in the rolling currents.

XII. HAZARDS; SAFETY PRECAUTIONS

XII, 1. Fire

STATIC ELECTRICITY. Grounding principles and practice. V. Static electricity in industry. Robin Beach, Robin Beach Engineers Associated. *Elec. Eng. 64,* 184-94 (May 1945). Although grounding all stationary and rotating parts of machinery employed in processes where static electricity is generated is mandatory, grounding alone will not dissipate the charges quickly enough in cases where

the static is generated by rapidly moving stocks of paper, textiles, power and conveyor belts, and rubberized fabrics. Humidification may or may not help—exposure of cotton fibers to 50-55% relative humidity during carding and drawing reduces electrification, but if the humidity is increased a few per cent, the cotton may clog on the carding units and catch fire because of the intense frictional heating. Static combs should be used in such operations as printing of textiles to avoid fires or explosions in the presence of solvent-air mixtures.

XII, 2. Accidents

ELECTRIC SHOCK. Use of drugs in resuscitation from electric shock. C. K. Drinker, M. D., Harvard University. *Elec. Eng. 64,* 288-9 (August 1945). After reviewing the action of drugs known to stimulate breathing and discussing the effect of electric shock on the heart and circulation, the author states, "At the present time there is no substance which can be given by injection which benefits the breathing significantly", but it should be possible to find "some direct aid to the respiratory center", and such research should be undertaken by the electrical industry.

XII, 3. Occupational poisoning and diseases

WORKERS' COMFORT. For plant morale keep workers fit in hot weather. Ernest A. Dench. *Southern Knitter 9,* No. 7, 33, 53 (July 1945). The correct methods of dressing and eating in hot weather to counteract heat fatigue, which have to be taught to textile workers; the supplying of clean and comfortable working quarters, and sodium chloride tablets, which are the duties of the executive staff; and the extra safety precautions required to avoid accidents caused by sweaty hands are reviewed briefly.

XIII. TEXTILE MILLS

LABOR RELATIONS. AIEE report on collective bargaining. Anon. *Elec. Eng. 64,* 239-45 (July 1945). "After careful inquiry into present membership practices of unions and prevailing Government attitudes and policy, an A[merican] I[nstitute] of E[lectrical] E[ngineers] committee has prepared this comprehensive report considering all the implications of the engineer's bargaining position in industry. The report recommends preparation of a factual manual on the American labor movement and establishment of a continuing committee on collective bargaining. Sponsorship of any collective-bargaining agency by the Institute or any of its Sections is disapproved, though the possibility of the AIEE's occasional intervention in disputes as a friend of the court in behalf of its members is recognized."

LABOR RELATIONS. The Research and Engineering Professional Employees Association. Philip Hill, Standard Oil Co. (Indiana). *Rev. Sci. Instruments 16,* 193 (July 1945). The Research and Engineering Professional Employees Association at the Standard Oil Co. (Indiana), the first union composed solely of professional technical employees to be recognized by the N. L. R. B., has gotten Standard Oil to agree to allow each chemist and engineer in its employ to have up to six days a year off with full pay to attend national or committee meetings of recognized technical and professional societies.

TEXTILE DESIGNERS. Instruction in textile design. Richard S. Cox, Philadelphia Textile Institute. *Can. Textile J. 62,* No. 12, 21-22, 45-6 (June 15, 1945). Designers of textiles can be successful only if they: (a) know from their own experience as operators the working of the looms and the methods of cutting design cards, (b) have a full knowledge of yarns and weaves, (c) are careful in making their sketches, (d) know dyeing and printing processes, and (e) know how to use designs and color in their products.

TRAINING LABOR. Symposium, Cotton Board's Recruitment and Training Department Conference, Manchester, July 25, 1945. *Textile Mfr. 71* (August 1945). Papers by: A. H. Seymour, Training for industry, p. 321; and J. Baines, J. Williamson & Son, Ltd., Cotton labour training problems and solution, p. 322.

XIII, 2. Machinery

VIBRATION INSULATION. Vibration insulation and structural rubber. J. A. Connon, United States Rubber Co. *Elec. Eng. 64,* T324-9 (June 1945). The properties of structural rubber which enable it to be used as mountings to protect machinery from vibrations are discussed with the aid of tables and graphs. The principles of designing mountings are reviewed.

BALER. Baling device. Jesse A. Haase. Can. P. 428 911, July 24, 1945. A baling machine has a reciprocating plunger operating in the baling chamber, a wire gripper on one side of the chamber, a wire feed on the side opposite the gripper that moves across the chamber to feed a strand of wire to the gripper, means for feeding the material to be baled into the chamber in advance of the plunger and behind the wire strand, a wire-tie mechanism arranged next to the gripper, means for oscillating the gripper along the baling chamber to move the end of the wire gripped by it into the tying mechanism and to engage the strand of wire projected across the baling chamber, means for operating the wire-tie mechanism, and means for severing the tie wire from the source of supply.

BALER. Bale former. Jesse A. Haase. Can. P. 428 912, July 24, 1945. In a baling machine a baling chamber with a baling plunger reciprocating horizontally in it and a precompression chamber extending across the baling chamber are claimed. The precompression chamber has an intake opening in its vertical side wall, delivers through its own end into

a vertical side wall of the baling chamber, forces the material to be baled into the baling chamber by means of a horizontally reciprocating plunger, and severs the material to be delivered to the baling chamber from the source of supply by means of a reciprocating knife.

BALER. Baler wire guide. Jesse A. Haase. Can. P. 428 913, July 24, 1945. A baling machine has a baling chamber with a reciprocating plunger operating in it; a wire gripper on one side of the chamber that is movable longitudinally and able to grip the free end of a wire extending across the chamber when it is in its forward position; a wire-tie mechanism on the same side of the chamber as the gripper; and a feeding needle reciprocating across the baling chamber from the side opposite the gripper for projecting across the chamber a wire loop with one strand near the rear end of a formed bale and the other extending from a source of supply. The gripper moves toward the rear of the baling chamber for laying the free end of the wire in the tie mechanism, grips the needle loop at the completion of its rearward movement, and moves forward to lay the strand of the loop which is next to the bale in the tie mechanism. Means are provided for preventing the other strand of the needle loop from entering the tie mechanism as the bale strand of the loop is laid in it by the forward movement of the gripper.

XIII, 3. Power

XIII, 3b. Electric

ELECTRIC DRIVES. Electric driving of textile factories. III. E. Howlett. *Textile Mfr. 71,* 317-9 (August 1945). Analysis of the items making up the capital and annual costs of steam-mechanical and electric drives for textile mills demonstrates that in England the increased costs of coal and the higher wages paid make the present annual cost of the two practically identical. The capital cost of electric drives is lower in all respects except that of the power equipment. Graphs show the costs of electricity and coal, and the fuel consumption per unit of electricity generated at a super power station, all for 1933-44; and the total mechanical and electric power ordinarily in use in spinning and in weaving cotton in 1924 and 1930.

FAILURES OF INSULATION. Chemical contamination as causes of electrical-insulation failure. C. H. Braithwaite, Jr., & G. L. Moses, Westinghouse Electric and Manufacturing Co. *Elec. Eng. 64,* T580-83 (August 1945). Investigation of seemingly mysterious cases of failure of electric insulation revealed contamination with ionizable materials, *e. g.,* certain types of protective hand creams, soldering fluxes, and germicides in lubricating oils. The effect of these materials on the electrical characteristics of the insulation is reported.

XIII, 3d. Power transmission

POWER TRANSMISSION. Smooth power transmission smoothens troubles in textile mills. Henry Miedendorp, Jr. *Rayon Textile Monthly 26,* 357-60 (July 1945). The textile industry has gone too far in the adoption of unit driven machinery—properly designed group drives should be installed for warpers, slashers, winders, coners, and circular knitting machines. Unit drives are economical for most looms. Modern flat leather automatic tension drives, multiple V-belts, and vari-pitch sheaves are smooth in operation and require little or no servicing. Nine photographs show unit and group drives in various parts of a textile mill, and a table furnished by Graton & Knight Co. shows the dimensions of belts to be selected for motors of various horsepower and speed.

XIII, 4. Materials handling and transport

RIBBON SPOOL. Spool for ribbons and other narrow fabrics. Kurt Freiler. USP 2 380 641, July 31, 1945. A spool for ribbon and other narrow fabrics has for a body a disk with segments extending around the outer portion. These segments are bent transversely of the disk to form seats on which strips of material may be wound. A notched reinforcing disk is clamped to the body of the first disk, in such a way that the notches have mounted in them the edges of the transversely aligned segments of the first disk.

WINDING PAPER. Paper roll handling apparatus. Earl E. Berry & Lloyd Hornbostel (to Beloit Iron Works). Can. P. 428 647, July 10, 1945. Claim is made to a paper-winding apparatus having a pair of driven under-drums, a winder shaft cooperating with the under-drums to receive and wind a paper web into a roll, bearing caps holding the winder shaft in the drum cooperating position, an abutment ring on the shaft adapted to thrust against a bearing cap, a track, ejecting means for moving the shaft and roll out of the caps over the track, a spare winder shaft having an annular cap abutment ring, and means for feeding the spare winder shaft into the bearing caps with the abutment ring riding in the track to align the spare shaft relative to the caps.

SHIPPING CONTAINER. Edwin G. Hellyar. Can. P. 428 915, July 24, 1945. A shipping container for cloth comprises an end member with a slot through which a plate bearing hooks is fastened retractably.

SHIPPING CONTAINER. Edwin G. Hellyar. Can. P. 428 916, July 24, 1945. A container for cloth comprises several spaced end-members having a slot extending through them with inwardly converging end walls, a hook plate in each of the slots with a number of hooks extending into the container from the end members, means including extensions from the end of the hook plate to engage the ends of the slot to secure the hooks retractably in position to support the cloth, and means including a notch in the hook plate for preventing rocking of the plate when the cloth is first secured to hooks at the opposite end of the plate.

THE GEAR-WHEEL PUMP. A DISPLACEMENT-

FORCE ANALYSIS. William H. Rasche, Eng. Exper. Sta. Bull. 61 (regular Bull. *38*, No. 11 (Sept. 1945)), Va. Polytech. Institute, Blacksburg, Va., Sept. 1945; 19 pp.; price 15¢.

PIPING POINTERS FOR INDUSTRIAL MAINTENANCE MEN. Bulletin of the Crane Co., Chicago, Ill., n. d.; 31 pp.; gratis. A short, copiously illustrated exposition of methods of fitting pipe and valves contains a glossary of piping terms, and an explanation of the common types of valves and their operation.

XIII, 5. Lighting

LIGHTING. Lighting and safety. H. L. Logan, Holophane Co. *Elec. Eng. 64,* 217-20 (June 1945). A great many accidents reported to the National Safety Council as carelessness are actually caused in the first place by improper lighting. This is shown by several cases drawn from factories, by analogy with night traffic accidents and with accidents in the home. In-service lighting levels are more nearly 40% of design levels than the 70-80% customarily assumed by industrial lighting engineers; work has to be as bright as the surroundings; and scientific painting can help greatly in the reduction of accidents and in speeding up work. These, and other similar considerations, mean that "lighting for safety . . . requires engineering ability and . . . knowledge of a high order."

XIII, 7. Process control; control instruments

TEMPERATURE CONTROL. Electronic control of furnace temperatures. Anon. *Elec. Eng. 64,* 289 (August 1945). According to M. J. Manjoine, Westinghouse Electric Corp., an instrument 1000 times more sensitive than conventional temperature controls for governing electric furnace temperatures consists of two thermocouples of different thermal capacity and an electric heating element, enclosed in an evacuated glass envelope. Changes in the temperature of the furnace are anticipated by the unit and corrective steps are taken so quickly that temperature fluctuations are very small.

MOISTURE CONTENT CONTROL [FOR TEXTILE FIBERS]. Bulletin of the Barber-Colman Co., Rockford, Ill., May 1945; 6 pp.; gratis.

XIII, 8. Water supply

WATER-CLARIFICATION. Waste water utilization by clarification. Charles Carpenter & Cover C. Porter, Southland Paper Mills, Inc. *Paper Trade J. 121,* TAPPI 66-70 (August 16, 1945). Waste water from a paper mill was freed of pulp fibers in a Spaulding type precipirator, which handles 1200 gal. per min. of feed water containing 2 to 3 lb. per thousand gal. solids and delivers a clarified effluent containing 0.1 lb. per thousand gal. Operation is continuous and trouble free. No extraneous chemicals or flocculating agents are required. The laboratory and pilot-plant work leading to the design of the final unit is described, a flow diagram of the commercial unit is given, and pilot-plant data are tabulated.

XIV. TEXTILE RESEARCH

COTTON RESEARCH. Impetus to cotton research. Anon. *Textile Mfr. 71,* 316 (August 1945). At the annual meeting of the British Cotton Industry Research Association, the council reported a new program to be spread over a number of years, made possible by the receipt of a grant of £80,000 from the Government, £65,000 from the Cotton Board for the next two years, and £20,000 from the Federation of Master Cotton Spinners' Associations, as well as increased subscriptions from a large number of individual members. F. C. Toy, director, said that about 1000 special problems had been undertaken for the British and Allied Governments; and that the new engineering department will extend the Association's efficiency in the development of machinery, especially as first-class mathematicians and physicists are to work along with the practical engineers.

PATTERN FOR INDUSTRY. C. J. T. Cronshaw. *J. Textile Institute 36,* P65-76 (June 1945). Whatever its size—and modern industry is growing toward constantly larger units—business requires research, production, and selling. No one branch is more dignified than the other: the scientist can contribute to all.

PATENTS. University patents bureau would help industry. E. W. M. *Silk & Rayon 19,* 664 (June 1945). Because the costs of patenting inventions in England are prohibitive for the average independent inventor, it would be advantageous to form patent bureaus at various universities. They would give technical and legal advice; do the preliminary search for novelty, draw up the patent papers, prosecute the case through the patent office, pay all fees during the life of the patent, and control infringement; give advice on licensing; and do the work involved in getting the invention ready for industrial application. Such a bureau to serve the textile industry should be located at Manchester.

RESEARCH LABORATORY. The new Firestone research laboratory. Anon. *India Rubber World 112,* 597 (August 1945). The new laboratory built in Akron, Ohio, for the Firestone Tire & Rubber Co. is described and illustrated in several photographs. The laboratory has prefabricated steel inner walls and partitions which can be moved to rearrange at will the interior of the building. Service units provide hot, cold, and distilled water; steam; gas; vacuum; compressed air; and a wide range of alternating and direct current. Some of the apparatus housed in the building is mentioned.

RESEARCH LABORATORY. Post-war plant of Bell Telephone Laboratories and General Electric Co. Anon. *Rev. Sci. Instruments 16,* 200-01 (July 1945). The Bell Telephone Laboratories is plan-

ning to double the size of its research laboratory at Murray Hill, N. J. (The original laboratory cost $2,000,000 and employs 2000 people.) And General Electric Co. is going to build an $8,000,000 research laboratory just outside Schenectady to house a staff of 800 scientists, machinists, glassblowers, and non-technical employees.

RESEARCH. Federal support of postwar research. Vannevar Bush, Office of Scientific Research & Development. Summary of the report to the president. *Science 102,* 79-81 (July 27, 1945); *Rev. Sci. Instruments 16,* 231-7 (August 1945); *Fortune* (Sept. 1945). For the war against disease, for our national security, and for the public welfare research must receive more support than it can obtain from endowment funds and from industry. Our scientific talent must be renewed by retraining veterans and by starting in new students. Scientific data collected during the war must be published. These are all matters of such vital interest to the nation that the government should supervise them, preferably by means of some over-all agency devoted fully to that purpose.

STATISTICAL ANALYSIS OF TEST DATA. E. I. Stearns, American Cyanamid Co. Calco Tech. Bull. 773, American Cyanamid Co., Bound Brook, N. J., May 1945; 13 pp.; gratis.

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